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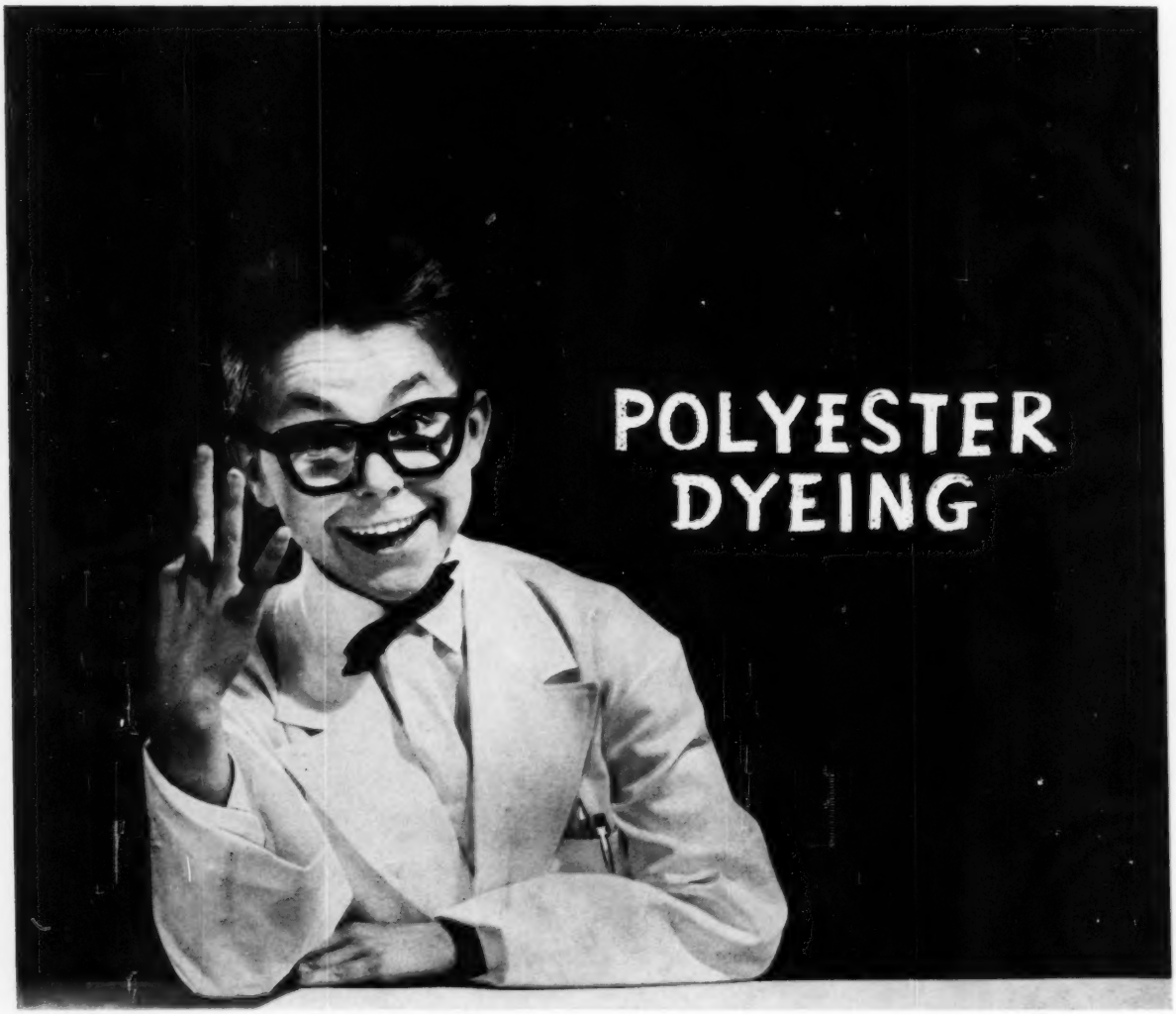

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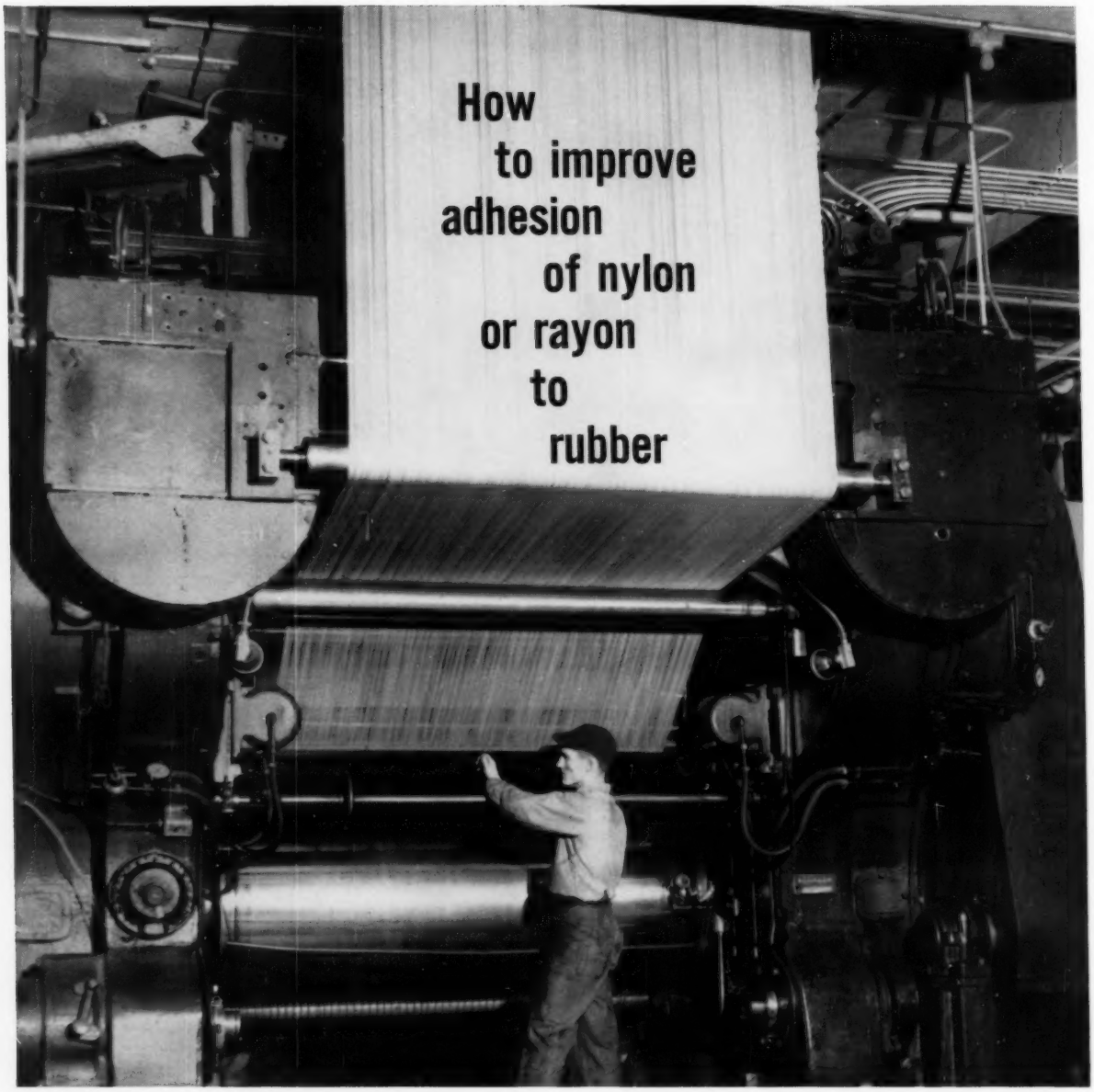

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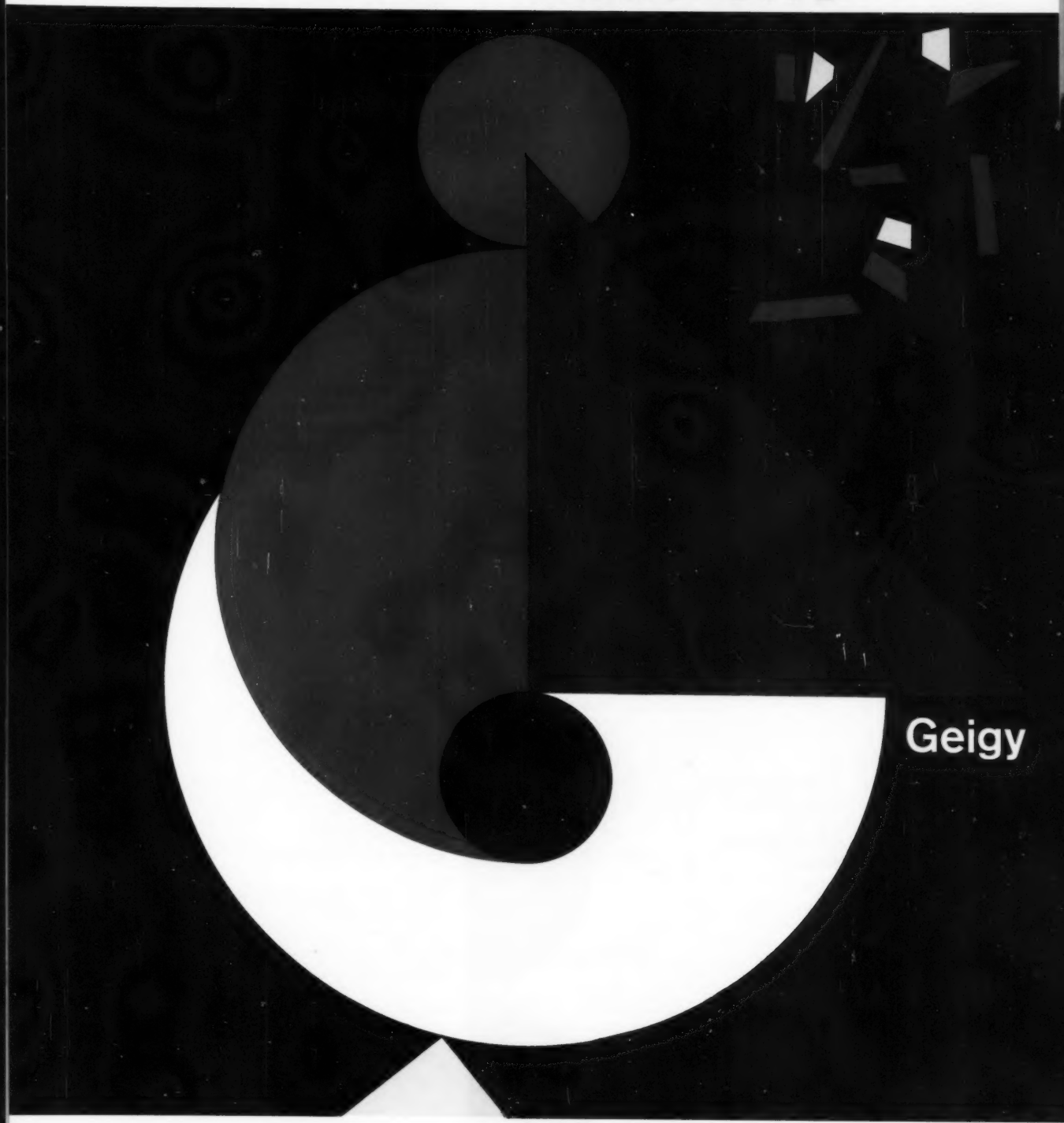

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specially contributed

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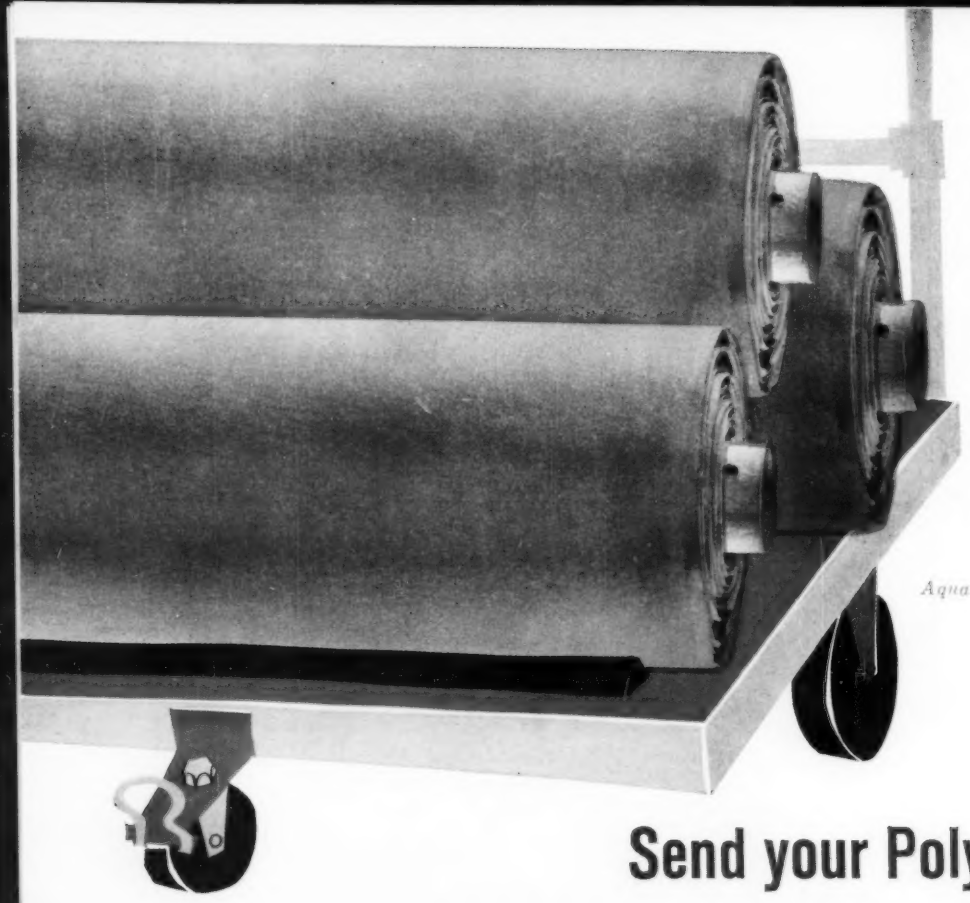

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ADR OPEN FORUM

April 3, 1961

WITH this page, *American Dyestuff Reporter* brings to its readers an additional editorial service—an Editorial Page, a place for comment, suggestion and opinion on matters affecting the fortunes of the textile-wet processing industry.

The publishers of *American Dyestuff Reporter* believe there is a need for—and good use can be made of—a platform for an expression of ideas and thought about the many facets of our particular business, in the areas that precede, impinge upon or follow the specific area we all are concerned with, wet-processing technical knowledge, as well as in that area itself. The content of a technical paper does not begin nor end in a vacuum. What sociological, scientific, economic or political development helped to bring it into being? And what could be its potential impact on a specific operation, or on group business health, at the supplying or consuming levels? How are the processes of our industry affected by change and development in allied industries, by shifts in governmental attitude and action, by foreign development? How is our industry affected by its own actions, or inaction, by its own organizations? If progress, on any given matter, is aided by preliminary examination, current evaluation, and reflective judgment, then there is in our industry a useful place for a forum designed to yield enlightening discussion.

Though much of the material appearing here will be prepared by the staff of the *American Dyestuff Reporter*, a great deal of it will arise from you, the reader. We most sincerely invite—urge—you to let us know your viewpoint on any question you are concerned with, or concerned about. Sometimes, we shall take the initiative and be in contact with you, to secure the benefit of your thinking. On some subjects, regarding which opinion may be strong both for and against the issues, it is our purpose to present both sides of the question. Together—reader and publisher—we can strive to bring into clearer focus some of the questions that continually arise in our industry, including those to which an answer cannot be found in a technical paper.

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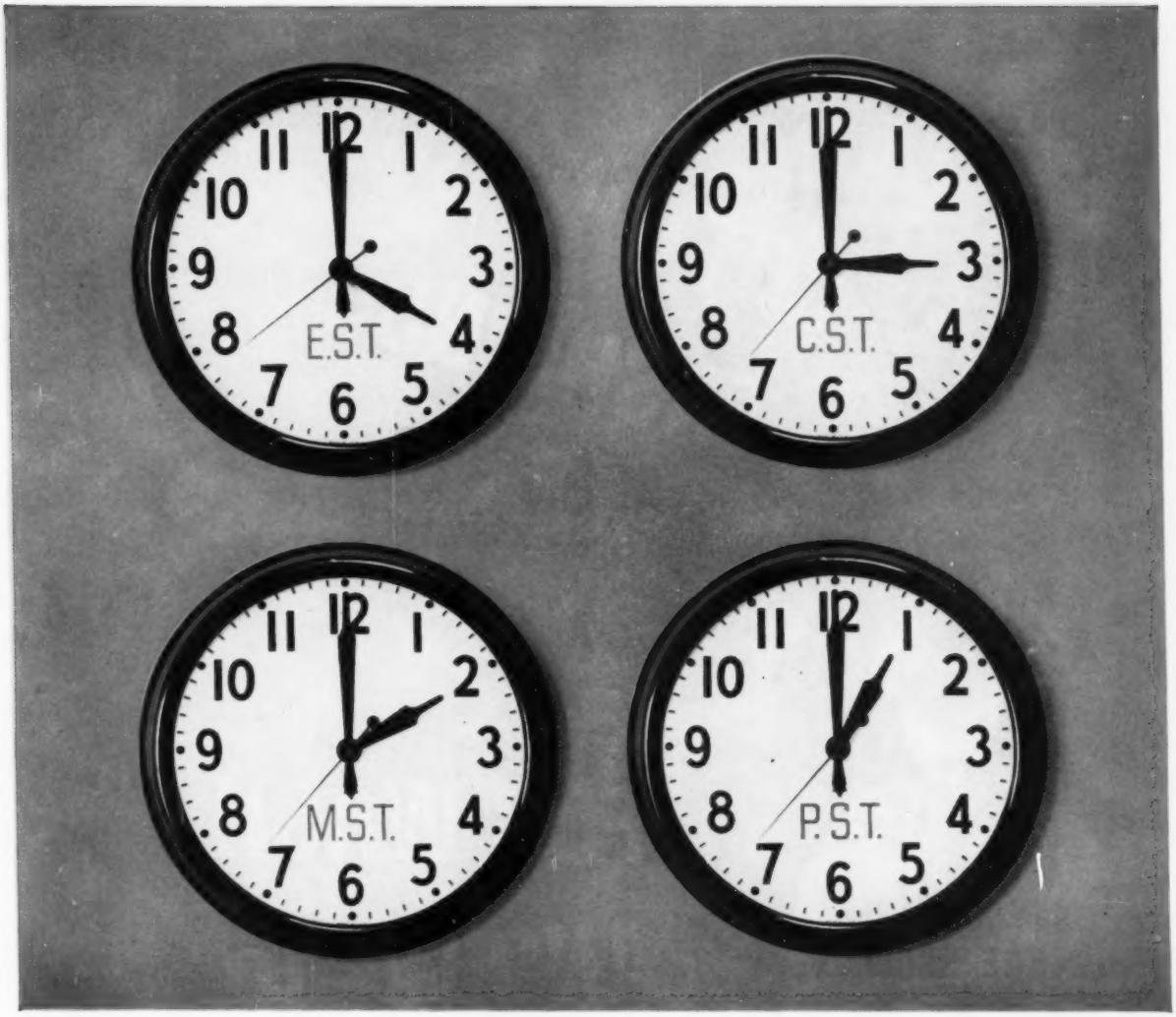

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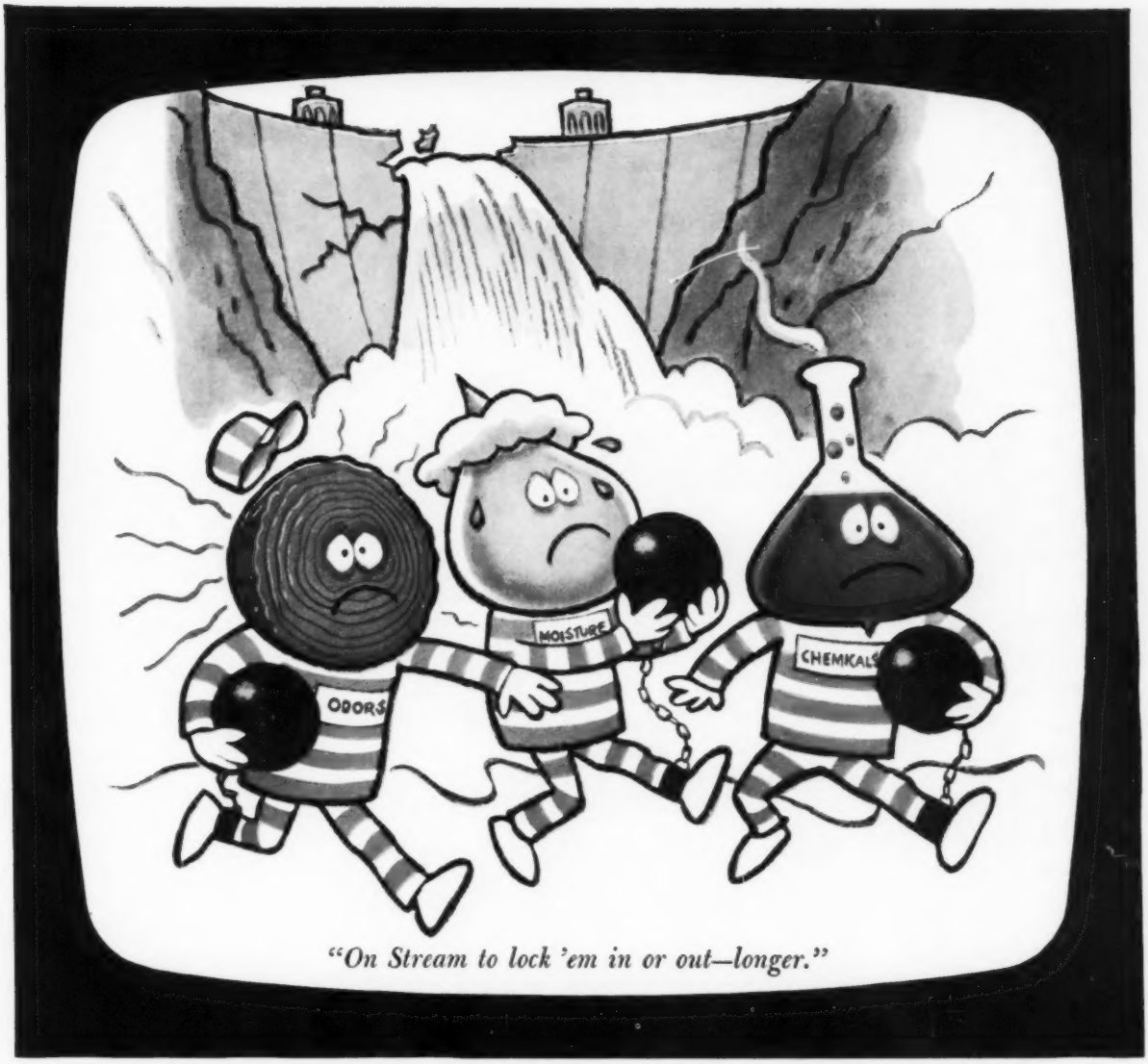

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AMINIZATION OF COTTON— COST ANALYSIS APPLICATION

S P KOLTUN, K M DECOSSAS, G L DRAKE JR, E F POLLARD and E L PATTON

Southern Regional Research Laboratory[1]

New Orleans, Louisiana

AM cotton, a chemically modified cotton in which aminoethyl groups are introduced into the cellulose molecule, has excellent affinity for wool-type acid dyes, good ion-exchange capacity, and a high degree of reactivity. This reactivity lends itself to further chemical modification.

Cost data are provided that are needed for considering the feasibility of producing AM cotton. Investment and processing costs are compared with those reported in an earlier cost article.

A number of variables were considered in this analysis, such as chemicals cost and processing rates.

This analysis is based on treating 52-inch wide 80 x 80 print cloth, 3.1 linear yards per pound, by continuous operations in a hypothetical plant, at a processing rate of 120 yards per minute. Only conventional textile processing equipment is required for this process.

It is estimated that after considering the more important variables, processing costs would range from 5.2 cents per yard or 3.6 cents per square yard at an annual production of 60.5 million yards to 6.2 cents per yard or 4.3 cents per square yard at an annual production of 14.4 million yards.

INTRODUCTION

AMINIZED cotton is aminoethyl cellulose. A process for introducing the aminoethyl groups into a cellulose molecule by reaction of cotton with 2-aminoethylsulfuric acid in the presence of sodium hydroxide (*2, 5*) was developed at the Southern Regional Research Laboratory, resulting in a fabric of unique properties. Cotton fabric modified by this process has a high affinity for the wool-type acid dyes, whereas ordinary untreated cotton fabric does not readily accept such dyes. Moderate ion-exchange capacity is also imparted to the cellulose by addition of the amino groups. These ion-exchange properties have been found to be similar to those of ion-exchange resins. But perhaps the most interesting characteristic of aminized cotton is its reactivity, brought about by the displacement of the hydroxyl group by the aminoethyl group. This reactivity lends itself to further chemical modification, such as the attachment of flameproofing agents.

This article provides cost data needed for considering the feasibility of producing AM cotton. These cost data are estimates based on hypothetical plant operations, and have been developed for annual productions of 14.4 to 60.5 million linear yards. An earlier cost article (*3*) included processing costs for the continuous aminization of cotton fabric at a fabric processing rate of 50 yards per minute.

[1]One of the laboratories of the Southern Utilization Research and Development Division, Agricultural Research Service, U S Department of Agriculture.

Estimated processing costs are for continuously aminizing cotton fabric at a processing rate of 120 yards per minute using conventional textile equipment of the size generally found in most finishing plants. Considerations during analysis included possible equipment economies, process improvements, production rate increases, degree of substitution, recovery of chemicals, and possible reduction of chemicals costs by price projection and the use of crude aminoethylsulfuric acid. Costs at the two fabric processing rates are compared.

PROCESS

The treatment (*4*) can be applied in conventional finishing equipment (with one exception), which consists of mixing tanks, pumps, a padder, infrared (radiant) gas burners, a roller curer, a continuous washing range, and an enclosed tenter frame (See Figure 1). If the exception, infrared gas burners, is not used, either a roller dryer or a roller curer with increased holding capacity can be used.

Caustic soda is first dissolved in water with agitation in a mixing tank, and then 2-aminoethylsulfuric acid (2-AES) and a wetting agent are added. This solution is then pumped or gravity-fed to a three-roll padder trough, through which the fabric is passed. Wet pick-up is maintained at approximately 140% from the padder. The fabric is then dried by passing between infrared burners so that heat is applied to both sides of the fabric. Little or no reaction of the chemicals with the cotton occurs until the curing step. However, after

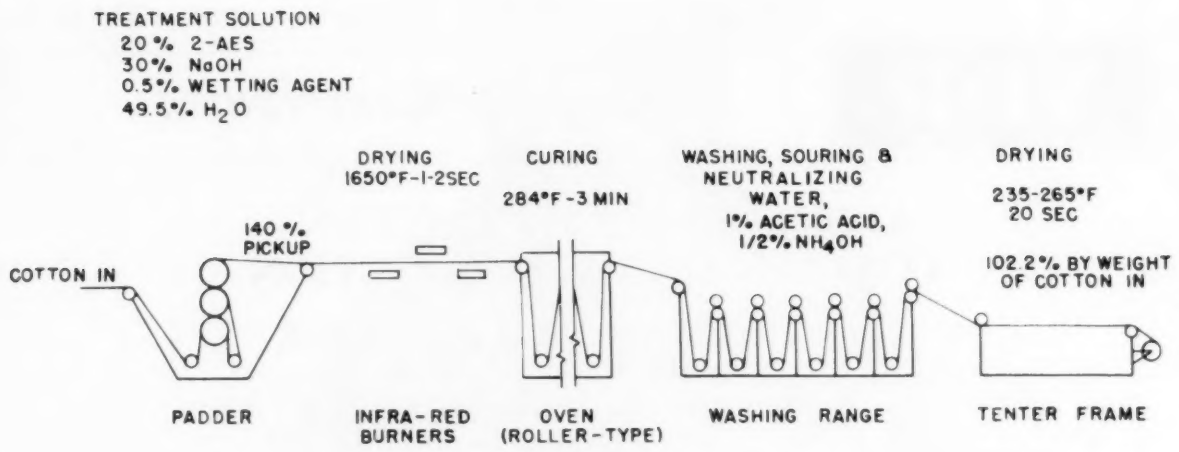

Figure 1
Continuous aminization of cotton fabric

three minutes at 284°F in the roller curer, aminoethyl groups are introduced into the cellulose molecule, producing aminized cotton. Washing, souring and neutralization are then performed in an open-width washing range, using warm water, acetic acid and ammonia, respectively.

Final drying of the product is accomplished in a tenter frame at 235-265°F for 20 seconds.

In this estimate, the processing rate was assumed to be 120 yards per minute. Costs were computed for treating 52-inch wide 80 × 80 print cloth (3.1 linear yards per pound), resulting in a product having a degree of substitution equivalent to a nitrogen value of 0.6%.

Hypothetical plants were operated for one, two, and three shifts for 250 days per year, and for three shifts for 350 days per year.

Annual plant capacities were thus varied from 14.4 million linear yards up to 60.5 million linear yards.

CONSIDERATIONS IN THE ANALYSIS

A number of variables or approaches were considered, but after careful analysis and investigation they were ruled out as being impractical or uneconomical.

The first item investigated was chemicals cost. In the preliminary cost study a current price for 2-AES of 40¢ per pound was used. This chemical is the most expensive of the chemicals used, and the chemicals cost is the major contributor to the total processing cost. With this in mind, it was believed that considerable economy could result from the preparation of 2-AES from its basic ingredients at the finishing plant by plant personnel, rather than by purchasing the commerically prepared acid. Subsequent investigation revealed that the reaction was one involving not just simple addition or double decomposition, but requiring heating, cooling, heating under vacuum, and recrystallization. If the crude product of the addition of ethanolamine and sulfuric acid were to be used in the aminization of cotton, probably no reaction would occur. The crude product is a salt, ethanolamine sulfate, which is in itself nonreactive with cellulose. By rearranging the structure of the salt, 2-AES is formed and is reactive with cellulose.

Correspondence with industry also pointed up that furnishing 2-AES in aqueous solution (or the crude form) was not desirable because of the possibility of hydrolysis, which might convert part of the 2-AES into the salt—nonreactive ethanolamine sulfate. One manufacturer of ethylene imine found it more economical to purchase the 2-AES, an intermediate chemical, than to make it himself and use it as a captive chemical.

Processing rates were then investigated. Rates of 120, 150 and 200 yards per minute were considered. Correspondence from one textile finishing plant indicated that the only limitation in washing and drying speed would be the mechanical limitation of the washer involved. On their equipment, this was approximately 150 yards per minute. It was also stated that in plants specializing in lightweight type of fabric, speeds in excess of 200 yards per minute could be obtained. However, when textile processing equipment of this type is used in a range, speeds in excess of 125 yards per minute are not commonplace.

Some of the latest textile equipment, while operating at very high speeds and evaporative capacities, is still restricted to lower speeds because of the curing operation. Therefore, at only fairly high speeds with this equipment, batch processing would be required.

An alternate piece of equipment for drying and curing was considered—the molten-metal bath (*1*). Experiments performed in the laboratory have demonstrated that fabric can be passed through molten metal at 338-374°F in about 15 seconds after predrying, and completely cured in that period of time. However, ap-

TABLE I
Continuous aminization of cotton fabric[1]—Installed equipment costs

No.	*Equipment*	*Installed Cost*[2]
1	Three-roll padder	$ 5,955
12	Infrared gas burners	8,775
1	82-ft roller curer	110,880
4	Two-box washing ranges	117,920
1	120-ft tenter frame	113,165
1	35,000-gal caustic soda storage tank, steel	5,000
2	2500-gal agitated mixing tanks, 316 ss	28,460
1	1500-gal acetic acid dilution tank, 304 ss	7,315
3	Pumps with motors	1,575
	All Units	$399,045[2]

[1] 80 × 80 cotton print cloth, 52" wide, 3.1 linear yards per pound, at rate of 120 yards per minute.
[2] Installed equipment cost would be approximately $16,000 less for operating one shift for 250 days per year because of smaller storage tank and fewer mixing tanks.

TABLE II

Continuous aminization of cotton fabric—Total plant costs

	Low production level		*High production level*	
Annual plant capacity (mil yds)	6.0[1]	14.4[2]	25.2[1]	60.48[2]
Annual operations (days)	250	250	350	350
Daily operations (hours)	8	8	24	24
Installed equipment	$ 459,240	$383,315	$ 469,740	$399,045
Process piping	36,740	49,830	37,580	51,880
Instrumentation	9,185	11,500	9,395	11,970
Outside lines	13,780	11,500	14,095	11,970
Auxiliary facilities	40,000	28,335	40,000	28,335
Buildings	191,000	137,235	191,100	139,535
Total physical plant cost	750,045	621,715	761,910	642,735
Engineering and construction	150,010	124,345	152,380	128,545
Contingencies	112,505	124,345	114,285	128,545
Total plant cost	$1,012,560	$870,405	$1,028,575	$899,825

[1]Columns 1 and 3 list costs reported in the preliminary estimate.
[2]Columns 2 and 4 list costs developed in the analysis application.

TABLE III

Continuous aminization of cotton fabric—Operating costs

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
Annual plant capacity (mil yds)	6.0[1]	14.4[2]	12.0[1]	28.8[2]	18.0[1]	43.2[2]	25.2[1]	60.48[2]
Annual operations (days)	250	250	250	250	250	250	350	350
Daily operations (hours)	8	8	16	16	24	24	24	24
Total plant cost ($)	1,012,560	870,405	1,028,575	899,825	1,028,575	899,825	1,028,575	899,825
Manufacturing cost (¢/yd):								
Direct costs	5.4	4.2	5.1	4.0	4.9	4.0	5.0	4.0
Chemicals	4.1	3.7	4.1	3.7	4.1	3.7	4.1	3.7
Labor	0.3	0.1	0.3	0.1	0.3	0.1	0.4	0.1
Utilities	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1
Other	0.7	0.3	0.4	0.1	0.2	0.1	0.2	0.1
Indirect costs (Payroll overhead, general plant overhead, and packaging costs)	0.3	0.3	0.2	0.3	0.2	0.3	0.3	0.3
Fixed costs (Insurance, taxes, and depreciation)	1.5	0.5	0.7	0.3	0.5	0.2	0.3	0.1
Contingencies	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.2
General expenses (¢/yd)	1.6	0.9	1.1	0.7	1.0	0.6	0.8	0.6
Total operating cost								
(¢/yd)	9.1	6.2	7.4	5.5	6.9	5.3	6.7	5.2
(¢/sq yd)	6.3	4.3	5.1	3.8	4.8	3.7	4.6	3.6
(¢/lb of product)	27.6	18.6	22.4	16.7	20.9	16.0	20.4	15.9

[1]Costs reported in the preliminary estimate listed in columns 1, 3, 5 and 7
[2]Costs developed in the analysis application listed in columns 2, 4, 6 and 8.

plication of the molten-metal bath has not progressed beyond the laboratory stage, and it is believed that an evaluation at this time of hypothetical commercial operations using this technique would be premature. There could be considerable savings in investment and operating costs by using such a bath instead of the roller curer. It is not believed that the infrared dryer would be eliminated because the fabric would have to be free of excess water in order to reduce spattering and achieve the desired degree of substitution.

The degree of substitution originally reported (3) was believed to be the optimum that could be obtained, so no attempt was made to alter the respective quantity of chemicals involved.

In this study infrared burners were used between the padder and the roller curer in order to reduce the size (holding capacity) of the curer. Savings could thus be achieved in processing rates, utilities, equipment cost and floor space. This method of drying is currently in practice at several finishing plants in this country.

No consideration was given to chemicals recovery, since the factors of instability and complexity of conversion were such as to render recovery not economically feasible.

COSTS

Installed equipment costs, shown in Table I, are estimates based largely on costs obtained from manufacturers for individual equipment units for continuous processing at a rate of 120 yards per minute.

A comparison of plant investment costs reported in the preliminary estimate (3) and developed in the analysis application is presented in Table II.

Similarly, total plant costs and operating costs reported in the preliminary estimate and developed in the analysis application are tabulated in Table III.

Two suppliers of commercial quantities of 2-AES have stated that in tonnage quantities, 2-AES would sell for 35¢ per pound. In large-scale industrial operations the price could be lowered considerably.

Using a price of 35¢ per pound of 2-AES and a processing rate of 120 yards per minute, operating costs were estimated to range from 5.2¢ per yard or 3.6¢ per square yard at an annual production of 60.5 million yards to 6.2¢ per yard or 4.3¢ per square yard at a annual production of 14.4 million yards. This represents a reduction in cost of 1.5¢ per linear yard compared with the preliminary estimate when operating 350 days annually, 24 hours per day, and 2.9¢ per linear yard when operating 250 days annually, eight hours per day.

A reduction in chemicals cost of 0.4¢ per yard resulted from the reduction in price of 2-AES from 40¢ per pound to 35¢ per pound. Reductions in other items of cost, such as labor, other direct costs, indirect costs, fixed costs, etc, result primarily from increased processing rates.

The costs of Table III are plotted versus the respective annual productions in Figure 2.

Figure 3 illustrates the yardage of aminized cotton fabric a finisher could expect to obtain for his investmen dollar, based on a new installation at the two processing rates.

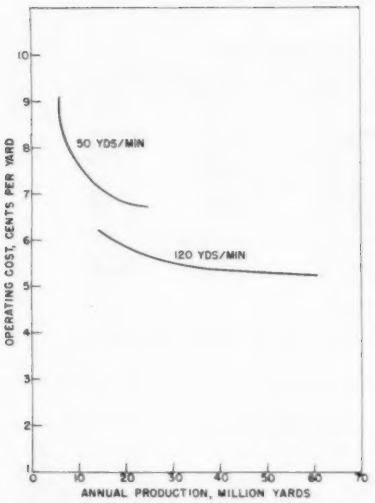

Figure 2
Operating cost for continuous aminization of cotton fabric (80 × 80 print cloth, 52" width, to DS of 0.07)

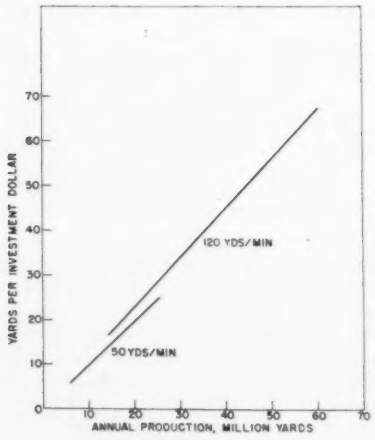

Figure 3
Output per dollar invested for continuous aminization of cotton fabric (80 × 80 print cloth, 52" width)

CONCLUSIONS

This treatment which introduces aminoethyl groups into cotton cellulose could enable cotton to extend itself as a chemical intermediate for the attachment of other useful substances. The amino group which displaces the hydroxyl group enhances the reactivity of cellulose, and lends itself to further chemical modification, such as the attachment of flameproofing agents (5).

Aminized cotton can be made permanently flame-resistant by reacting it with tetrakis (hydroxymethyl) phosphonium chloride. The degree of flame-resistance is dependent upon the degree of aminization, since it is the amino groups that combine with the tetrakis compound.

It is believed that, by using aminized cotton as a chemical intermediate, smaller quantities of other compounds normally used to react with cotton for achieving certain desired modifications could be possible.

SUMMARY

Costs for the continuous aminization of 80 × 80 cotton print cloth to a degree of substitution of 0.07 in a hypothetical plant have been substantially reduced as a result of this analysis. The molten-metal technique, which has not as yet been evaluated, holds promise for further cost reduction. The reduced costs make aminized cotton more attractive for intermediate use, particularly for imparting durable flame retardancy to cotton fabric, which presently requires the use of high priced chemicals.

ACKNOWLEDGMENT

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We also wish to acknowledge the assistance provided by Claire L Weber, statistical clerk, Engineering and Development Laboratory, Southern Utilization Research and Developemnt Division, in the preparation of tables for this manuscript.

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FUTURE PAPERS

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ADR ABSTRACTS

Progress in the Perfection of Antistatics

Sherwood, P W, *Textile Bull* 87, 63, 66, Jan, 1961

Static electricity is a charge generated by friction between nonconducting surfaces. Its phenomena are generally recognized. Of most importance to the textile industry are the mutual attraction of oppositely charged particles (resulting in the pick-up of lint and dirt on the fabric), the mutual repulsion of bodies bearing a like charge (causing difficulty in aligning yarns), and the occurrence of sudden discharge (eg, in the form of a spark) when contact is finally made with a conductor.

A potential hazard of static electricity exists with nearly all fibers. Cotton, rayon and wool, which are fairly hygroscopic, are capable of dissipating electric charges sufficiently, so that the potential problem only rarely becomes a real one, but the man-made fibers, due to their low surface conductivity and low moisture absorption, find static a real danger. Not all synthetic fibers are subject to the problem in the same measure, however.

The purpose of an antistatic agent is to increase the conductivity of the material so that the electric charge may leak away as rapidly as it is formed.

The ideal antistatic should be colorless, compatible with dyes and finishing agents, and without any effect on the fabric's strength and hand. A permanent antistatic should also be fast to washing and drycleaning. No such ideal agent has yet been found, but progress is being made.

The nondurable antistatics, used mostly as processing aids, are almost entirely surface-active agents, chiefly quaternary ammonium or polyoxyethylated compounds.

Durable antistatics are cross-linked ion-exchange resins which are formed in the fiber. These resins generally contain polyoxyethyl chains as well as ionic groups. They are applied to the fiber from aqueous solutions by interaction with a cross-linking agent (eg, an acidic or peroxide catalyst). The composition of a typical washfast antistatic is described.

Among the more successful antistatic finishes which have been developed are dialkyl dimethyl ammonium chloride, alkyphenoxy polyethoxy ethanol and alkyl alkanolamine phosphate.

Two references to the literature are cited.

•

Where Orlon Stands Today

Demme, G S, Thompson, C, and Hicks Jr, E M, Papers AATT, *Modern Textiles* 42, 39-45, Feb, 1961

The Du Pont Orlon staple and tow enterprise was started in 1952 with a product known as Type 41. This product had a few deficiencies, and a new Orlon, known as Type 42 (so-called "regular" type) was introduced in 1953. For woolen-type apparel goods, Type 39 was also offered.

To expand the uses of Orlon into the full range of textile markets where it logically fits, according to the author, at least seven new types have been developed during the last three years. The full list, with the principal uses of each type, is as follows:

Orlon Sayelle Types 21 and 24 bicomponent fibers (for sweaters and knit goods).

Type 28 (animal effect) staple (for sweaters and knit goods).

Type 36 carpet staple (for 100% pile usage).

Type 37 carpet staple (for blends).

Type 38 tow and staple (for deep-pile fabrics).

Type 44 tow (for cross-dyeing).

Type 72 skin-contact staple (for cotton-blend underwear, sport shirts, etc).

Type 75 staple (for cellulosic blends).

Specific features of Type 72 staple include outstanding comfort in hot and cold weather next-to-skin wear; whiteness equal to bleached, brightened cottons without need for bleach, stable to home laundering; retention of softness and dimensional stability in repeated laundering; dyeability, coloration values and general physical properties equal to regular Orlon Type 42.

Type 36 carpet staple competes with wool and has several advantages, including soil and static resistance and superior wear life.

Type 44 tow is a differentiated polymer type, with the same physical properties as regular Type 42 but cross-dyeable with acid dyes.

The physical properties of Orlon Sayelle fibers are similar to those of regular Orlon, but the cross-section is quite different. The fiber produces a three-dimensional crimp on heat-treatment, and a reversible crimp on wetting and drying. It has a "touch and feel" similar to wool, high elasticity and bulk. Type 21 is recommended for hand knitting yarn.

A filament yarn, Orlon Cantrece, is also manufactured.

•

The Polynosic Fiber

Anon, *Textile Recorder* 78, 50-2, Feb, 1961

From time to time, new words and terms appear in the terminology of textile technology, often without warning.

The latest word to appear is "polynosic", and its occasional use must have mystified many readers. It is not self-explanatory, and it has no scientific meaning. The word was coined a few years ago by the Comptoir des Textiles Artificiele in France, as a generic term for viscose rayons of a special type characterized by a high wet modulus of the same magnitude as cotton. The properties of the new fibers are such that it was thought desirable to have a new name quite separate and distinct from rayon.

The manufacture of viscose rayon involves the conversion of cellulose into the alkali-soluble sodium xanthate. When this is extruded into an acid bath, it is converted into cellulose xanthic acid, which rapidly decomposes into regenerated cellulose. These regeneration reactions take place very quickly and there is little opportunity to stretch the filament.

An important modification of the original process took place about 1912 when Napper added small amounts (about 0.5-1.5%) of a zinc salt to the viscose spinning bath, and so converted some of the sodium cellulose xanthate to its zinc salt. The conversion into cellulose xanthic acid was slowed down by this addition, giving more time for stretching and reorientation. The tensile strength of the fibers was improved.

Further changes in the process, about 1937, increasing the amount of zinc salt and the stretch, improved the tenacity of the fiber still more. The success of the rayon tire cord is said to be due to this new modification.

In 1950 it was found that the addition of certain quaternary ammonium compounds to the cellulose xanthate solution improved the properties of the final

yarn still further (these quaternary compounds are not surface-active).

Some remarkable improvements in physical properties were obtained. The tenacity was increased, and the ability to withstand repeated flexing (fatigue resistance) was substantially improved. Furthermore, the water imbibition of the new fibers is much lower than that of ordinary rayon, and the wet strength is about 70 percent of the dry strength. Also, the cross-sections of the filaments are round instead of scalloped.

Since 1950 there has been great activity in the field of additives to the cellulose xanthate solution, and hundreds of compounds have been examined. These products all serve to stabilize the solution.

Following are some of the physical properties of the polynosic fibers:

	Dry	Wet
Tenacity	3.4 gpd	2.7 gpd
Breaking extension	10.0%	12.0%
Elastic recovery at 5% extension	58.6%	90.6%
Moisture regain	12.2%	
Water imbibition		60.0%

●

Setting Wool Textiles with Ethanolamine

Koenig, N H, Wasley, W L, and Pardo Jr, C E, *Textile Research J* 30, 901-2, Nov, 1960

During an investigation of setting agents, the authors observed that highly effective setting of creases in wool textiles can be accomplished simply by steam-pressing fabrics treated with very dilute solutions of ethanolamine. Durable creases and pleats can thereby be imparted to wool garments without significant damage to the hand, strength, or other properties of the material, they state.

Because the ethanolamine is nonvolatile, it remains in the fabric; in the small amount used, it causes no apparent wool damage.

In the process, the ethanolamine is applied to the textile (usually as an 0.25-2% aqueous solution) by spraying or immersion, and is heated, while folded to form pleats, at temperatures between 100° and 150°C by a tailor's steam press or other heating device. A small amount of a wetting agent (isooctyl phenyl ether of polyethylene glycol) is added to the solution.

To test the durability of the creases, the treated fabric was washed in a household washing machine and tumble-dried in a household dryer. Fabrics that had been steamed for 30 seconds gave the best results. Breaking strength tests showed no significant loss.

Durable creases have also been imparted to dyed fabrics shrinkproofed by polyamide-epoxide resins without loss of shrinkproofing or adverse effect on the dye. The authors suggest, however, checking dyed fabrics for possible dye-shade alteration, and determining in advance the optimum ethanolamine concentration and pressing time for a particular fabric.

Five references to the literature are cited.

●

The Coating of Fabrics with Polyvinyl Chloride

Mattinson, E H, *J Textile Inst* 51, P690-8, Dec, 1960

Coating of fabrics with polyvinyl chloride (PVC), for tarpaulins, tents, awnings, etc, consists in the application of a plastisol or dough of polyvinyl chloride polymer, plasticizers, and a filler, together with the necessary stabilizers against heat and light and the required degree of pigmentation. Other agents, such as fungicides, can be added if necessary.

These plastisols are applied to the cloth by one of five main methods, using either a doctor-knife or some method of coating by means of a furnishing roller. The five methods, which are described, are as follows: knife on roller; knife on moving endless rubber blanket; unsupported knife; roll coaters; and dip coating.

In all these methods the maintenance of thickness is important and difficult. A modern method of control is based on the absorption of beta rays from a radioactive source (eg, strontium 90). Such beta-ray gauges give a continuous recording of film thickness, and can obviously be so designed as to adjust the doctor setting to give uniform coating thickness.

Much greater control of the finished result can be obtained by putting on a few thin coatings rather than one thick one, when coating by means of doctor-knives.

After the fabrics have been coated, it is necessary to cure them at a temperature of 160-180°C in order to activate the plasticizer and promote the solution of the polyvinyl chloride polymer in it with the production of a continuous elastic film. The time of heating depends on the thickness of the coating and is of the order of one to four minutes. This curing is normally done either by infrared heating or by hot-air methods.

High strength, particularly resistance to tearing, is of very great importance in the base fabric. In tarpaulins in particular, a reasonable lightness in weight to ensure ease of handling must also be considered. The coated cloth must have a good degree of flexibility and must be dimensionally stable. The coating should have maximum adhesion to the fabric and high abrasive resistance.

In general, coating tends to increase the tensile strength and to decrease the tearing strength of the fabric. Even under the best conditions a loss of 25-30% in tearing strength can be expected, and it may be much higher.

Continuous-filament nylon or Terylene fabrics, made either in mock leno constructions or in flat-weave cloths woven from twistless yarns, are widely used for coating purposes. Blends of continuous-filament high-tenacity polyamide or polyester fibers with cotton are also employed.

Poor affinity between a fabric made from man-made fiber yarns and PVC necessitates the use of some sort of bonding system. Polyester resins containing reactive hydroxyl groups, modified with polyisocyanates to form a cross-linking system, make good bonding material. Their application to the fabric is described.

●

Sewing Problems with "Wash-and-Wear"

Anon, *New Zealand Textile, J*, 45, 64 Winter, 1960

Since 'wash-and-wear" may on one occasion mean articles of clothing made of synthetic fibers, and on another, of cotton fabric, the question arises how clothing of such different basic materials can be grouped together under the name "wash-and-wear".

The essential property which distinguishes a "wash-and-wear" fabric is its resistance to wrinkling. This property must be retained during the wearing, washing and drying processes. Fibers to be processed must have a high degree of resilience, which likewise must be preserved during these processes. The prime factor is the low water absorption of "wash-and-wear" articles. For this, the synthetic fibers, which are naturally highly water-repellent, are particularly distinguished.

Cotton, on the other hand, is water-receptive. If cotton fabrics are to be made wrinkle-resistant, they are treated with a synthetic resin, which changes the fibers into water-repellent ones.

In the processing of "wash-and-wear" fabrics, certain sewing problems arise for the manufacturers of clothing, needles, thread and sewing machines.

(*concluded on page 63*)

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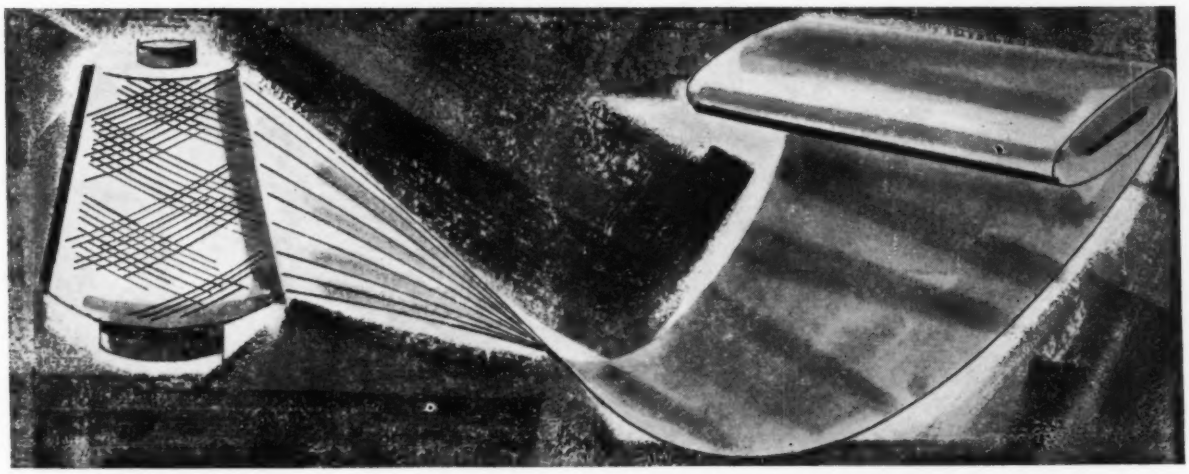

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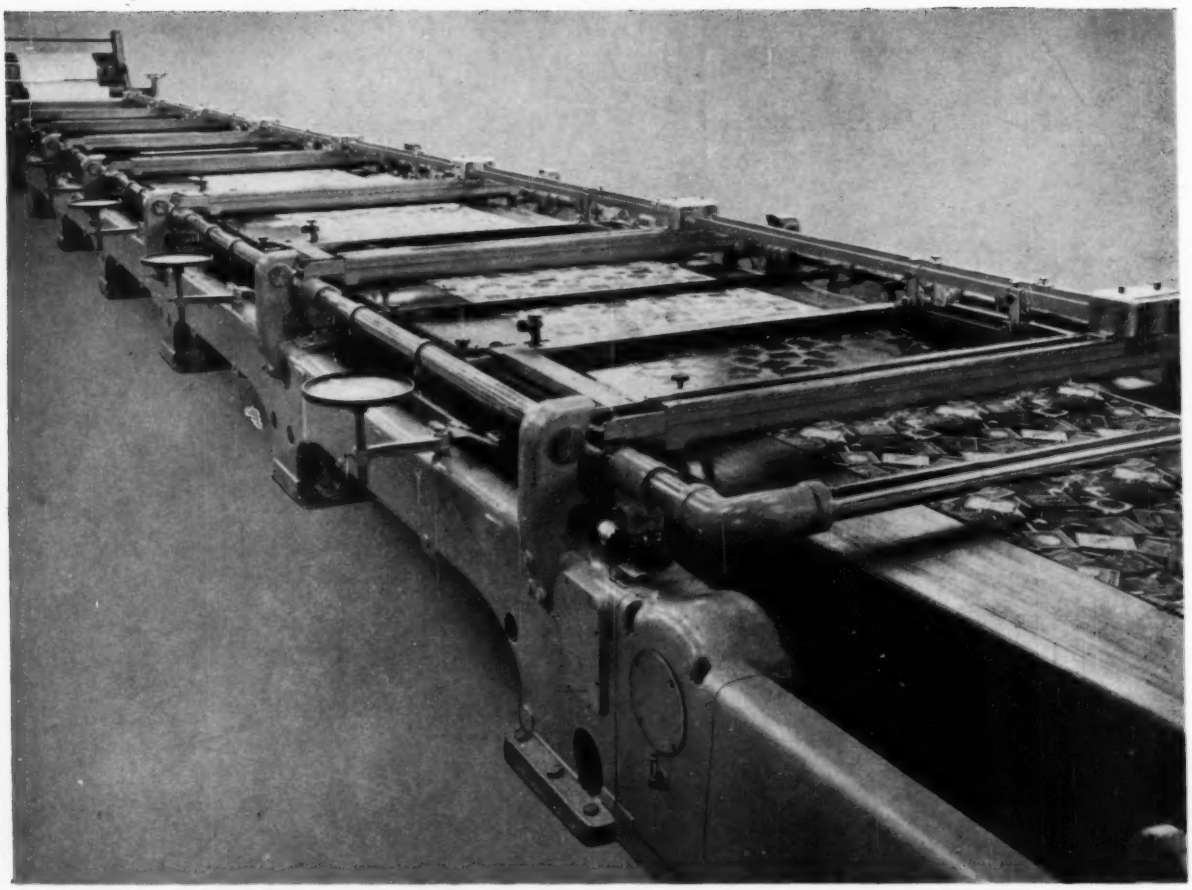

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April 3, 1961 No. 7

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1960 Convention———

DYEING WITH VINYL-SULFONE REACTIVE DYES*

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The interesting chemistry of the vinyl-sulfone fiber-reactive dyes has been elucidated to such an extent that it can be discussed intelligently without having a complete explanation for all reactions which take place during the dyeing with these dyestuffs. Because of the formation of the Remazol ether linkage, these dyes show different characteristics, which are explained. The methods of application for cellulosic fibers have been improved in many fields through research and practical experience. Methods and results acceptable to our industry because of their simplicity and gratifying performance are discussed and shown. Based on practical experience, samples of actual mill runs are discussed and practical suggestions made for the dyer of cotton and rayon packages, especially for the man who always has trouble dyeing vats on packages; for the man who has continuous equipment, such as chemical pad-steam units or curing ranges and the mill which dyes on the jig; for the dyer who has Smith-Drum Cascade machines; and for the man who dyes on the reel. The practicability of the dyeing from a long liquor ratio is discussed and it is shown which dyes are suitable for this particular process.

In this connection also the effect of resins on the shade and lightfastness is discussed. While vinyl-sulfone fiber-reactive dyes are especially designed for the dyeing of cellulosic fibers, practical results from mill runs are shown on man-made fibers; that is, certain acrylic fibers, on mixture of different acrylic fibers, on blends of wool, acrylic fibers and rayon, on blends of high-tenacity rayon, nylon and cotton, most of them in simple one-bath procedures.

YOU have been acquainted with fiber-reactive dyes for several years, mainly because of the general acceptance of this class by the textile industry. Fashion has changed, some print styles, only possible with fiber-reactive dyes, have disappeared for the time being and the use of the fiber-reactive dyes has to a great extent changed over to dyeing. Our practical experience in this field has given us many opportunities to show the advantage of this dyestuff class in many mills and for many materials and fiber blends for which these dyestuffs were not designed originally.

The interesting Remazol linkage has been explained before and when we expand a little on the theoretical aspects published in American journals, we ask kindly for forgiveness from those of you who know this subject as thoroughly as it can be understood today. Our explanations will help to elucidate questions that will arise later on.

The reaction of the Remazol dyes with cellulose can be explained by the following simplified mechanism.

$$\text{Dye}-SO_2-CH_2-CH_2-OSO_3NA \xrightarrow{\text{ALKALI}} \text{Dye}-SO_2-CH=CH_2 + Na_2SO_4 \quad (I)$$

In formula I we show the commercial, unactivated and stable form of the Remazol dye. In the presence of alkali, an unsaturated vinylsulfone is realized.

$$\text{Dye } SO_2-\underset{①}{C}(H)=\underset{②}{C}(H)H + HO-\text{Cel} \longrightarrow \text{Dye}-SO_2-\underset{①}{C}(H)H-\underset{②}{C}(H)H-O-\text{Cel} \quad (II)$$

The sulfone group has a tendency of attracting electrons moving them away from carbon 2 to carbon 1, thus activating the double bond which can now react easily with a proton donating hydroxyl group of cellulose (*1*).

This reaction is different from other fiber-reactive dyes which undergo a substitution reaction forming an ester. The Remazol dyes react by an addition reaction forming an ether, not an ester.

We have thus created a compound of higher stability against outside influences. The Remazol linkage is, for instance, not affected by atmospheric acid hydrolysis. Therefore, no decrease in fastness to washing or perspiration can be observed even after prolonged wear of garments in the smog of Los Angeles.

As with all reactive dyes, a secondary reaction with water also takes place with the Remazol dyes.

$$\text{Dye}-SO_2-CH=CH_2 + H-OH \longrightarrow \text{Dye}-SO_2-CH_2-CH_2-OH \quad (III)$$

It has to be our aim to direct the dyeing process in such a way that reaction II is preferred and reaction III is eliminated as much as possible since the hydroxyethylensulfone type produced in formula III has lost its reactivity. The printers among you know that these addition products of vinyl-sulfone dyes with water do not show any disturbing affinity for white cellulosic fibers. However, the amount of dye which reacts with water is lost for the dyeing process of cellulose.

Reaction with water can be decreased first of all by lowering the liquor ratio of water to fiber and also by lowering the energy which causes this reaction, namely by dyeing at lower temperatures. The best conditions have been established empirically but the preferred reaction of the dye with the cellulose under such conditions can only be explained with additional factors. One is that cellulosic fibers have the ability to absorb alkali. This is probably one of the main factors which makes it possible to dye reactive dyes from long liquor ratios (*2*).

Vickerstaff (*3*) has established that the difference between internal and external pH for cotton is approximately one pH unit and for rayon about 1.5 pH units. This and the higher reactivity of the hydroxyl groups of cellulose and the slow reaction with the hydroxyl groups of water makes this dyeing process economical.

The extreme conditions of the shortest liquor ratio are naturally obtained by padding. The high degree of linkage with the fiber by padding and steaming should prove that the reaction of the vinyl-sulfonyl group with the hydroxyl groups of cellulose is preferred over a reaction with the OH groups of water. Since continu-

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ous dyeing of Remazol dyes has been discussed in other papers (eg, 4), we do not have to go into details for this method; however, a new development should be mentioned here. Bicarbonate paddings with Remazol dyes should be steam fixed as soon as possible and should not be exposed to atmospheric fumes for several days. However, mill procedures make it frequently necessary to postpone steam fixation. In this case, we substitute for bicarbonate Remazol Salt FD, which is stable for a long period of time. It is practically neutral and is only converted into an alkali during steaming. Pad dyeings containing Remazol Salt FD are therefore not affected by acid fumes prior to steam fixation and would accommodate those mills which, by necessity, have to collect material over several days before it can be steamed.

Mill runs have also shown that our suggested OW emulsion thickener prevents migration of Remazol dyes. This effect is particularly noticeable on corduroys where dyestuffs of low affinity have a tendency to migrate into the pile. Also cotton goods which have a tendency to show a skittery or tippy effect can be improved tremendously by adding the OW emulsion to the pad liquor.

Thermofixation which makes use of dry heat to promote fixation of dyes can also be employed for Remazol dyes. Remazol dyes can be applied by this method over a wide range of temperatures and fixation times. Cotton, rayon and polyester-rayon or cotton blends can be dyed by this economical procedure.

Cotton and rayon fabrics are padded with Remazol dyes, a small amount of thickener and sodium bicarbonate and then dried. For a temperature of about 300°F, a fixation time of three to five minutes will be required. At this low fixation temperature, we recommend an addition of urea. While the optimum yield differs somewhat between different dyes at different temperatures, we find that a very efficient average formulation can be designed which produces excellent yield with the majority of the Remazol dyes. Twelve Remazol dyes having normal reactivity require 50 g/l of urea at 300°F. Six slow-reacting Remazols require twice as much urea. When types of both classes are combined in a formulation, the urea requirement of the major Remazol dye component should be used. (See Table I).

At a fixation temperature of 400°F or higher, we do not recommend urea, and the amount of bicarbonate can be decreased.

TABLE I

Group I——SLOW REACTING
100 g/l urea at 300°F
- Remazol Yellow G
- Remazol Yellow GN
- Remazol Yellow RT
- Remazol Brilliant Red 5BA
- Remazol Red 3B
- Remazol Red B

Group II——NORMAL REACTING
50 g/l urea at 300°F
- Remazol Yellow GGL
- Remazol Yellow GR
- Remazol Golden Yellow G Conc
- Remazol Golden Yellow Y
- Remazol Brilliant Red BB
- Remazol Red Violet R
- Remazol Brilliant Violet 5R
- Remazol Brilliant Blue R
- Remazol Turquoise P
- Remazol Turquoise GBD
- Remazol Black B
- Remazol Black G

Group III——RAPID REACTING
No urea.
- Remazol Brilliant Orange RR

Urea is therefore omitted when we pad and thermofix blends of polyester and cotton from a bath containing Remazol dyes and disperse types, such as Latyl dyes. When disperse dyes are being used for padding polyester-cotton blends, such types should be selected which are fast to light on cotton, since, after the final wash-off, some disperse dye always adheres to the cotton, which could impair the fastness to light. According to our latest investigations, the best method for polyester-cotton blends is carried out with 1% sodium bicarbonate and 1% sodium borate for 60 seconds at 425°F, followed by a final wash in the open-width scouring. Scorching of the cotton is practically eliminated by the addition of borax.

The interest in dyeing with Remazol dyes from a longer liquor ratio has increased to such an extent that it seems appropriate to publish some of our experience to anticipate the needs of those who might be interested. Conditions are different when the ratio of material and liquor changes. We have mentioned before that the absorption of alkali by cellulosic fibers produces a difference between the internal and external pH of the fibers and makes them therefore receptive for Remazol dyes.

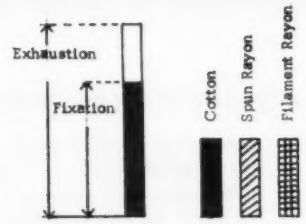
The longest liquor ratio exists when we dye on the reel. When we arrive at a liquor ratio of 1:20 or 1:30, it becomes necessary to eliminate those fiber-reactive dyes which have a low affinity and should be used only for padding or printing.

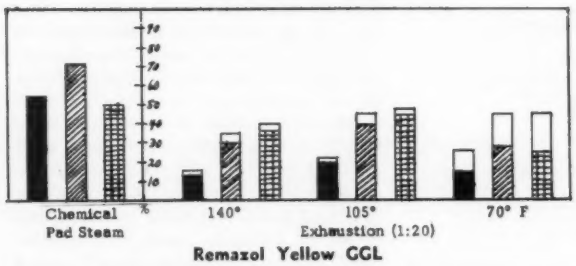
We shall therefore list those Remazols which can be economically used for the dyeing in longer liquor ratios. When we talk about a definite affinity in the case of a fiber-reactive dye, we do not give in reality the amount of dyestuff fixed on the fiber since, after soaping, a certain amount is washed off until the final stage of fixation is reached. Therefore, when we list the affinity of a fiber-reactive dye, we must at the same time always mention the percentage of washdown, or the amount actually fixed, that is if we want to state the cold facts. And when we come down to the facts, they are not bad at all. The washdown appears considerable, we all know that and have wondered about it, but what we actually have left on the fiber is more than considerable for the money we have paid for it. To show you graphically the relation of affinity (or exhaustion) and fixation and at the same time the percent of exhaustion and fixation, we have prepared charts which indicate that a much lower percentage of the estimated dye is washed off than might have appeared to us in the laboratory or the mill. These 13 charts were prepared for a liquor ratio of 1:20 at three different temperatures, namely, 70°F, 105°F and 140°F for cotton, spun rayon and filament viscose.

Since the chemical pad steam method usually produces the best yield, we list for each product also the fixed dyestuff value (found by this method) for cotton, spun rayon and filament viscose, to give you the opportunity of comparing the actual percentages of fixation for dyeings made by paddings and in dyeing from a liquor ratio of 1:20. All paddings were carried out with a pick up of 80%.

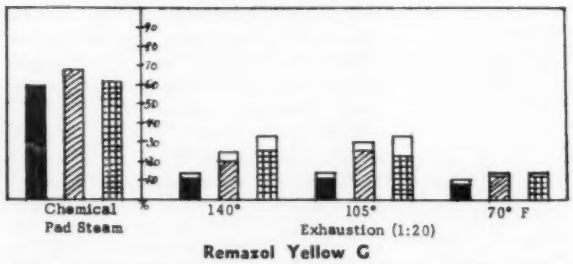
The full length of the bar shows the percentage exhaustion. The solid portion designates the actual fixation and the white upper portion shows the amount of dyestuff that washes off during soaping after dyeing. The black bar shows the fixation for cotton, the bar with diagonal hatching for spun rayon, and the crossed-hatched bar, the fixation for filament viscose.

It is self evident that we would not choose Remazol Yellow RT for exhaust dyeing. The brighter Remazol Yellow GR, however, is well suited for dyeing on the reel and so are most of the many other Remazol dyes, thus giving us a complete line to work with. Of the 13 Remazol dyes shown in the charts, only three would be eliminated for the dyeing in long liquor ratios. While we do not have the charts for all the Remazols, we can state that several other types, among them our turquoise brands, are perfectly suitable for package

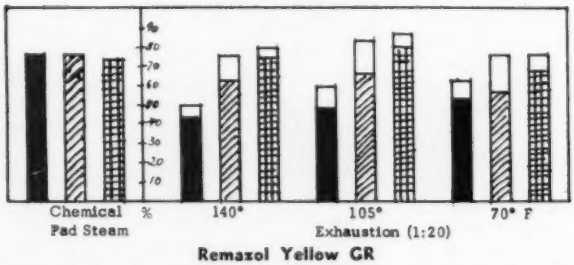




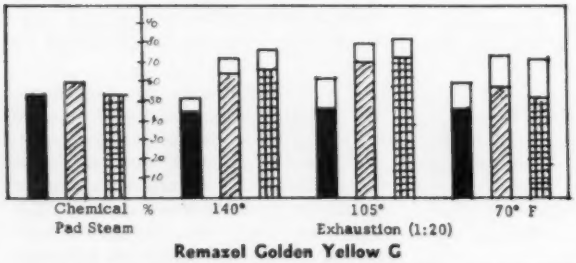
Remazol Yellow GGL



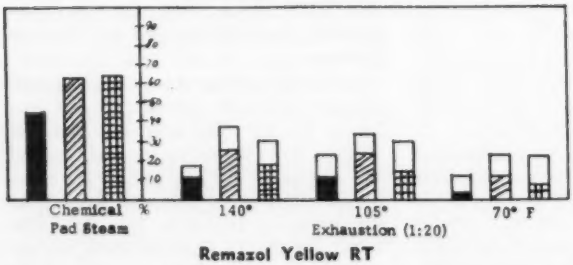
Remazol Yellow G



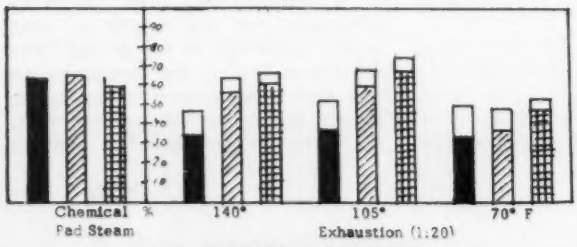
Remazol Yellow GR



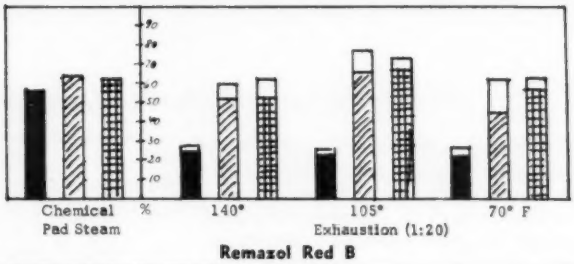
Remazol Golden Yellow G



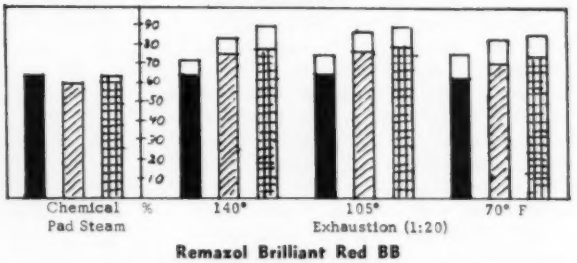
Remazol Yellow RT



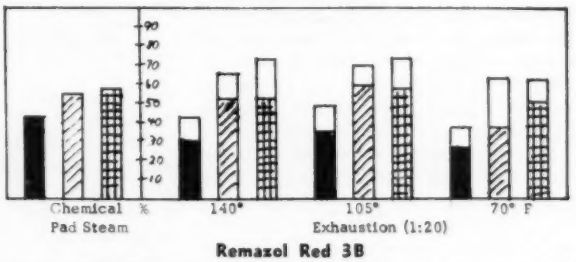
Remazol Brilliant Orange RR



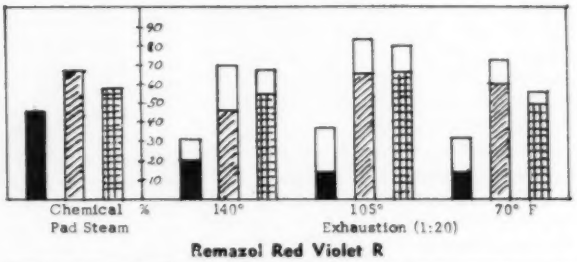
Remazol Red B



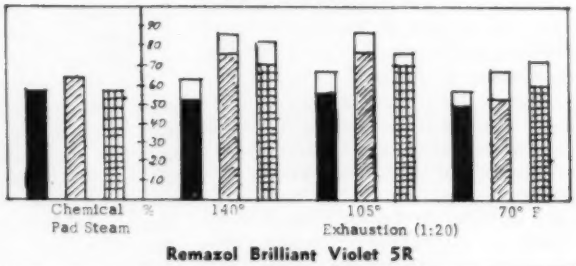
Remazol Brilliant Red BB



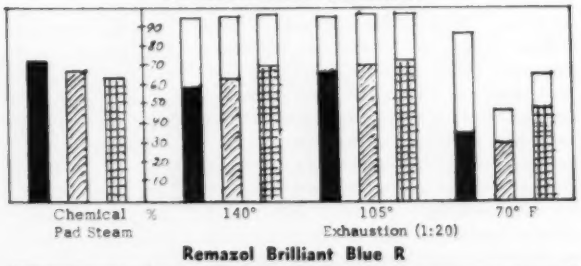
Remazol Red 3B



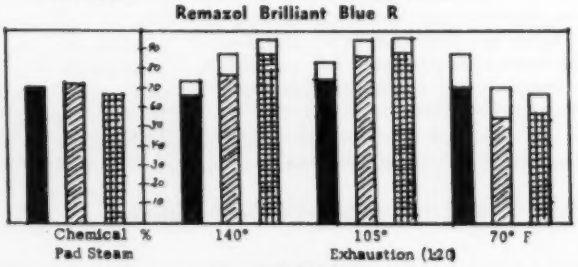
Remazol Red Violet R



Remazol Brilliant Violet 5R



Remazol Brilliant Blue R



Remazol Black B

dyeing as well as dyeing on the reel. The range is therefore, sufficiently extended to make the matching of most shades possible.

Now that we have established which Remazols have good affinity from a long liquor bath, we shall discuss their suitability for several processes.

Package dyeing has been done successfully and many thousands of pounds have been made into knitted goods, colored woven dress goods, shirting in medium and dark shades and wash- and lightfast upholstery material and draperies. We find that mills that were not successful in dyeing vats, especially blue shades on packages, can produce these shades without difficulty now with Remazol dyes. To dye a full and bright blue on rayon packages with vat dyes belongs to the better arts, while Remazols do not produce any particular trouble. Here Remazols are not only easier to apply and much better leveling, they are also cheaper and have essentially the same fastness properties. There are several ways of arriving at good results but we prefer to add all of the ingredients to the bath at once, first the dyestuff then the salt and finally trisodium phosphate.

We start usually at 100°F and circulate the liquor for 15 minutes before we raise the temperature to 130-140°F. We dye at this temperature for 45 minutes. Since we are using trisodium phosphate as an alkali, the salt should be free from calcium and the first cold rinsing bath should contain a product such as Quadrafos, (sodium tetraphosphate, $Na_6P_4O_{13}$). After the second cold rinse, we soap for 10 minutes, preferably at the boil, with a nonionic detergent and a polyphosphate product, such as Quadrafos. The last rinse should contain acetic acid which insures the best fastness to light. Most mills add a cationic softener to the bath to obtain smooth winding and knitting properties.

Details about chemical concentrations and timing can be taken from our technical information letters.

For skein dyeing, we use the same dyeing methods with the only difference that the alkali concentration of the liquor might be reduced somewhat for longer liquor ratio dyeing.

We would like to give a case where the mill had trouble in rewinding Schiffli rayon and the dyeing cycle had to be cut. We replaced, in this case, trisodium phosphate with caustic soda. The dyeing was carried out on a Smith-Drum Cascade machine at a liquor ratio of 1:20 with 2% caustic soda and 30% salt. The skeins were entered dry at 80°F, the temperature was increased within 10 minutes to 110°F, another 30% salt was added and after dyeing for 15 minutes, the liquor was dropped. The dyebath was practically exhausted. After washing cold for five minutes and soaping at 200°F for five minutes, rinsing and acidifying, this dyeing was found to be level in spite of the unusual short dyeing cycle. We have used this dyeing method at 110°F with caustic soda as alkali on different machines and on different materials. The dyeing time is not always so short as in the above-mentioned case of rayon where dyeing was completed after 15 minutes, but in all cases, level dyeings were obtained and matching to shade at 110°F seems to be no problem as the temperature of the dyebath does not have to be changed.

We have adopted a modification of this very simple dyeing method which can be used for package dyeing, for dyeing on the reel and Smith-Drum Cascade machine, as well as on the jig. Regardless of liquor ratio, we use 1.5% caustic soda flakes and 5% soda ash (as a buffer) on the weight of the material. The quantity of salt depends on the liquor ratio and shade. The dyeing temperature under these conditions is 110-120°F.

This method is being used for the dyeing of mercerized cotton knit goods in a liquor ratio of 1:20. We prepare the dyebath with the Remazol dyestuff, 20% salt, 1.5% caustic soda and 5% soda ash at room temperature, run five minutes and increase the temperature within 10-15 minutes to 110-120°F. After 10 minutes we add the second portion of salt and dye for 30 minutes at 120°F and sample. Dyestuff additions which were made at that temperature and under these conditions resulted always in level dyeings. Excellent repeat results give the knitting trade for the first time a line of bright, reproducible shades of a fastness not attainable so far on knit goods which are dyed in the piece.

After we have established that the Remazol dyes can be dyed from a rather long liquor ratio, it is self evident that they can be applied on the jig. We suggest using the caustic soda-soda ash method because there is practically no difference in temperature between the selvage and the center of the roll; but some mills prefer the use of trisodium phosphate at 140-160°F. We usually start at about 80°F and run one end with 50% of the dyestuff solution. Then we add the remaining dye solution and run one end. We divide the salt (from eight to 13 oz/gal) over two ends and divide the trisodium phosphate (from 1.5 to three oz/gal) over two ends. Then we raise the temperature to 140°-160°F and run at this temperature four or six ends. This is followed by a cold overflowing rinse for two ends. Then we soap as hot as possible for two ends with 0.5 oz/gal detergent and 0.5 oz/gal Quadrafos. After a hot rinse for two ends, we shell up through cold water containing a small amount of acetic acid to neutralize residual alkali. When linen is being dyed on the jig, we suggest adding to the soaping bath a little alkali for the easier removal of unfixed dyestuff. After rinsing we finish up with acetic acid as mentioned above.

Whenever tightly woven or difficult-to-penetrate fabric constructions are encountered, we start dyeing at 180°-200°F with the dyestuff and a good wetting agent and run the dry fabric onto the jig through the hot dyebath. The fabric is given further passes while allowing the jig to cool down to 140°-160°F. Then we add the salt, followed by the alkali, and proceed as described before.

This method makes use of the fact that the best affinity of Remazol dyes is at about 140°F. This point can either be reached from a lower or higher temperature.

Whenever turquoise shades are being dyed, the temperature has to be increased for best yield on cotton to 140°F with the caustic soda-soda ash method, and for best yield on viscose to 190°F with the trisodium phosphate method.

We would like to mention a dyeing method which was worked out in our laboratory, but in spite of the fact that it was never put into practice, it seems to be so simple and interesting that we hope to see a mill run in the near future. Rayon rawstock was padded at room temperature in a 2% solution of our Remazol dyes containing urea and sodium bicarbonate. Without intermediate drying, the dyeings were steamed for five minutes, washed cold for one minute and then they were soaped for one minute and rinsed again continuously with acetic acid in the last bath. Dyeings were obtained with a lightfastness of 80 hours or better and a perfect fastness to immersion for 24 hours at a pH of 10, a test used for carpets.

There is no reason why such a continuous operation could not be in-

stalled or be used for different materials, such as warps or slubbing.

At this point we have to mention a fact about testing lightfastness properties of Remazol dyes. Our experience has shown that, in many cases, especially where turquoise and blue shades were concerned, the Fade-Ometer was not always reliable. We have seen shades that faded in the Fade-Ometer badly in 20 hours but were as good as light standard 6 in the Florida sun. It might therefore pay to check bad Fade-Ometer results in sunlight.

At this point, we would like to talk to the branches of our industry that have not used Remazols so far because they feel that the prices of these dyes are too high. How expensive or cheap they are can be shown in a few cases where we have made comparisons between our Remazols and vat colors and also direct or direct, developed (D + D) types.

Approximate matches for some Remazol dyes were made with vat dyes and D+D colors. In some cases it was necessary to use direct dyes in place of D+D colors to approach the brightness of the Remazol shades.

Dyes and chemical costs were calculated for dyeing 100 lbs of cotton fabric based on pad steam application for the Remazols and vats and jig dyeing for the D+D and direct dyes. Pigment pad pick-up was 75% and chemical pad pick-up was 100%.

If such price comparisons are being made with the intention of coming to an honest conclusion, one has to select dyes of the other types which are reasonably close in shade and properties. (See Table II).

From the comparisons with our first six Remazol dyes, we found that:

1) The greenish yellow shade is about 17% cheaper than the vat and 6% more expensive than the duller D+D color.
2) The reddish yellow costs 52% less than the vat and 49% less than the D+D type.
3) The bright red costs 52% less than the vats and 38% less than the directs.
4) In the case of the bluish red, the vat costs four times as much but the direct color is 51% cheaper.
5) In the case of the violet, the vat costs more than twice as much and the direct dye costs also twice as much.
6) And now the blue. The so-called expensive Remazol Brilliant Blue R costs less than the vat and less than the direct dyestuff.

Now we shall show you a few mill comparisons. We have carried out four dyeings on cotton, run over the reel, a green, an orange, a lilac and a sand shade. According to the mill's calculation, the green, lilac and sand shade were cheaper than aftertreated direct dyeings on the same material. We could not cut the price on the orange but it was much faster. Of course, they were all much faster than the aftertreated direct colors.

It is not our aim to degrade the vat colors. In the long run, they will be faster than the Remazol dyes. But I wonder whether my friendly persuasion could go so far as to convince you that the meaning of these comparisons implies a death sentence for many D+D colors and direct dyes.

While the Remazol dyes are mainly designed for the dyeing of cellulosic fibers, we have shown that they also have affinity for other fibers, such as wool, silk, nylon, Creslan, Zefran and Acrilan.

Since the wetfastness properties of the Remazols on these fibers are, generally speaking, better than with acid or metallized dyes, we have to assume that we have a genuine chemical reaction between the fibers and the vinyl-sulfone dyes.

TABLE II

	Dye cost	Chemical cost	Total
3 oz/gal Remazol Yellow G	$ 8.70	$0.48	$ 9.18
13 oz/gal CI Vat Yellow 2	9.50	1.57	11.07
1.5% CI Direct Yellow 62	8.99	0.75	9.74
3 oz/gal Remazol Yellow RT	6.68	0.48	7.16
6.7 oz/gal CI Vat Yellow PGA	14.20	1.57	15.77
4% CI Direct Orange 83	13.25	0.75	14.00
3 oz/gal Remazol Red B	5.91	0.48	6.39
10.6 oz/gal CI Vat Red 1	12.25	1.57	13.82
3% CI Direct Red 81	10.10	0.20	10.30
3 oz/gal Remazol Red 3B	4.33	0.48	4.81
4 oz/gal CI Vat Red 10 + 1.3 oz/gal CI Vat Red 13	18.17	1.57	19.74
0.8% CI Direct Red 80	2.06	0.20	2.26
3 oz/gal Remazol Red Violet R	7.61	0.48	8.09
11.3 oz/gal CI Vat Violet 3	15.35	1.57	16.92
4% CI Direct Violet 46	16.00	0.20	16.20
3 oz/gal Remazol Brilliant Blue R	12.70	0.48	13.18
5.3 oz/gal CI Vat Blue 14	12.46	1.57	14.03
3% CI Direct Blue 108	15.75	0.20	15.95

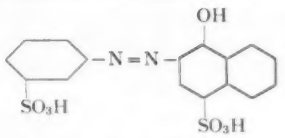


Figure 1

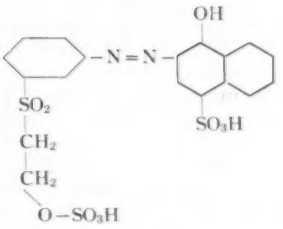


Figure 2

In order to show the difference between the affinity of the acid dye of the constitution in Figure 1, an analogous vinyl-sulfone dye of the constitution in Figure 2 was prepared (5).

Dyeings of both products on nylon 6 were boiled under reflux for one hour with 10 g/l soda ash and then neutralized. The dyeing with the vinyl-sulfone type was barely changed while the dyeing of Figure 1 was completely stripped.

Another experiment was carried out where dyeings of the above types on nylon 6 were separately dissolved in dimethyl sulfoxide and the solutions poured into a beaker with water. Thus, the polyamide is precipitated. The bath was acidified and a piece of wool was boiled in this solution for 30 minutes.

In the case of the acid dye, the bath was exhausted and the wool was dyed a deep orange.

However, the vinyl-sulfone type did not stain the wool because the fiber-reactive dye was completely bound to the polyamide in spite of the preceding dissolving process. The precipitated polyamide was dyed orange and the wool was white. This should show that an entirely different reaction occurs between the nylon and the Remazol dye than between nylon and acid dye.

It has been explained before that alkali changes the commercial Remazol into a reactive product containing a vinyl sulfonyl group, which reacts with OH groups under formation of an ether linkage. An activated double bond could engage in a similar reaction with amino groups.

$$HOOC-(CH_2)_5-NH[CO(CH_2)_5-NH]_n-CO-(CH_2)_5-NH_2+CH_2=CH-SO_2D \longrightarrow$$

$$HOOC-(CH_2)_5-NH[CO(CH_2)_5-NH]_n-CO-(CH_2)_5-NH-CH_2-CH_2-SO_2-D$$

Such a reaction can only occur when the Remazol dye is treated with alkali before or at the beginning of the dyeing process. In the case of fibers containing amino groups, we recommend, therefore, a pretreatment with alkali before the acid is added, if we want to obtain optimum wetfastness properties. Remazol dyestuffs containing a metal complex are easier activated to the vinyl-sulfonyl, and an addition of alkali could be omitted. However, we prefer to simplify our dyeing method and use the alkali pretreatment generally. We can therefore produce very good fastness properties on fibers such as nylon and wool, and also on blends of these fibers. An intrinsic feature of the Remazol dyes is their capability of dyeing wool-nylon blends tone-in-tone in light and heavy shades. We have not encountered any other dyes which, as a class, produce such bright shades of good fastness to washing and which can be applied with the same ease as the Remazol dyestuffs.

On silk, we obtain, as on other fibers containing amino groups, a better fastness when we start alkaline and finish with acid.

However, it was established later that a better dyeing of improved fastness properties was obtained when the process is carried out entirely in an alkaline bath. The dyeing is started at room temperature with 10 g/l (one oz/gal) sodium sulfate. The temperature is raised slowly to 105°F and two oz/gal sodium sulfate is added. The temperature is raised to 140°F within 15 minutes and further two oz/gal sodium sulfate is added, dyeing being continued at 140°F for 15 minutes. Then one g/l soda ash is added. After 10 minutes, we make a further addition of one g/l soda ash and dye 30 to 40 minutes at 140°F.

Then we rinse and soap at 180°F with one g/l detergent, five g/l salt and one g/l soda ash. The dyeings from such an alkaline bath are considerably heavier and the fastness to perspiration is better. The hand of the silk can be improved by an aftertreatment with an organic acid as is customary.

To point out the versatility of the vinyl-sulfone type of fiber-reactive dye, we would like to discuss our mill experience in the dyeing of a lace construction consisting of high-tenacity rayon, cotton and nylon. In contradistinction to normal rayon, the affinity of high-tenacity rayon for direct dyes is very low in the presence of cotton, so that in a mixture, the cotton is usually so much heavier that the high-tenacity rayon produces a big problem for the dyer. However, when we dye such a blend with Remazol dyes, we find that the opposite occurs; the high-tenacity rayon is darker than the cotton. We explain this with the fact that the high-tenacity rayon absorbs more alkali than the cotton from a long liquor. The difference in pH between the liquor and the interior of the fiber is greater in the case of the rayon and therefore, the rayon is dyed deeper. In an alkaline bath, some nylon brands absorb enough color. In this particular case, the nylon was considerable lighter. Therefore, the nylon had to be dyed by a trick method. Half of the bath was dropped and the rest of the dye was exhausted on the nylon with acid. This is an unusual case but the final result is a lace in which all three fibers are dyed the same shade; fast to light and fast to washing.

It is our contention that such a construction because of the contents of high-tenacity rayon could not have been dyed satisfactorily to a full shade of bright blue before the arrival of fiber-reactive dyes.

Of the man-made acrylic fibers, we have dyed Creslan, Zefran, and Acrilan.

Remazol dyes on these fibers are preferably used with sulfuric acid for best yield and fastness properties. The washfastness is outstanding, just as good as with naphthols. But as you know, it takes a long time to dye a black on Acrilan with naphthols, and the method is too complicated for the average worker in our mills. This Acrilan raw stock here was put in the kettle, dyed and scoured and ready to be taken out in less than three hours.

This Acrilan yarn was dyed on packages, knitted into material with white and other shades. Such knit goods undergo a hot-water treatment for which chrome colors are not good enough. All Remazol dyes leave Acrilan 16 white after the dyeing is soaped as usual. Remazol dyes produce, therefore, on knit goods and other materials made of Acrilan and Acrilan 16 interesting designs by a simple dyeing method with perfect fastness to washing.

While the Remazol dyes are especially designed for cellulosic fibers, they leave rayon and cotton perfectly white when they are dyed with acid on blends of Acrilan and cotton or rayon. Exactly the same holds true for blends of Creslan and rayon-Acrilan cotton or rayon material.

Good results have been obtained with blends of Acrilan-wool and rayon, dyeing Acrilan and wool the same shade and leaving the rayon white. You might be able to do that with chrome colors if you have a lot of time, but I do not believe that you would have the same success with chrome colors if an eight-piece kettle were crowded with twelve pieces.

We can show here pieces of Creslan and rayon dyed solid shades with Remazol dyes. We started in an alkaline bath with salt and TSP, and after the dyeing on the rayon was completed, we added acid, raised the temperature and exhausted the rest of the Remazol dye which partly had reacted with water and was in the inactive form of the hydroxyethylene sulfone, on the acrylic fiber. That way, a turquoise, a scarlet, a navy and a black were produced.

We would like to finish this paper with a compliment to the Delaware Valley Section, which has given an Intersectional Contest paper showing that fiber-reactive dyes can be simultaneously applied with a resin in an alkaline medium which assures us of an actual reaction of dye with the fiber and not with a mere addition to the resin (*6*). Such a method should have a future. It might be of interest, even if only theoretical because of price, that Imine IP (APO) produces a certain anticrease effect when cured with Remazol dyes with the mere addition of sodium bicarbonate.

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(6) Delaware Valley Section, AATCC, *Am Dyestuff Reptr 49*, P810 (Oct 31, 1960).

TRADEMARKS

The following registered trademarks have appeared in this paper:

Remazol—Carbic Hoechst Corp
Dacron—E I du Pont de Nemours & Co, Inc
Latyl—E I du Pont de Nemours & Co, Inc
Quadrafos—Rumford Chemical Works
Fade-Ometer—Atlas Electric Devices Co
Creslan—American Cyanamid Co
Zefran—Dow Chemical Co
Acrilan—Chemstrand Corp

Minutes———

204th Meeting
TECHNICAL COMMITTEE ON RESEARCH

THE 204th meeting of the Technical Committee on Research was convened at 2 pm on Thursday, January 19, 1961 in the Crystal Room of the Sheraton-Atlantic Hotel, New York, New York, with the chairman presiding. The following members were present:

G S Wham, chairman, TCR
F Fortess, vice chairman, TCR
C A Sylvester, chairman, ECR

E Artim
M J Babey
C A Baker
E Freedman
P J Fynn
A H Gaede
H B Goldstein
G J Greendonner Jr
H E Hager
L L Heffner
W A Holst
C Hooper
A E Johnson
L S Little
E M Lynch Jr
V D Lyon
G J Mandikos
T D Miles
H E Millson
E Morrill
J D Mosheim
A C Nuessle
W G Parks
R H Phillips
F A Prisley
J N Sivertson
G A Slowinske
R B Smith
R H Souther
J G Stass
R L Stutz
F J Szurek
C R Trommer
G Wernz
C L Zimmerman

Others present:

R P S Black
A T Clifford
C S Clutz
T C Cox
G M Kidder
T W Mooney
J E Pretka
M J Rudolph
E C Sherburne
W S Sollenberger
H Tovey
C A Whitehead
E G Wiest

After calling the meeting to order, Chairman Wham asked for approval of the minutes of the 203rd TCR meeting as published. A motion to this effect was made and seconded. The motion was adopted.

CERTIFICATES OF SERVICE———Chairman Wham then called upon C A Sylvester, chairman of the Executive Committee on Research, who presented a Certificate of Service to President E Morrill for his contributions, as a member of ECR, to AATCC's research and technical program. S J Kennedy, whose term of office as a member of ECR expired, was unable to be present to receive his Certificate of Service.

President Morrill then presented certificates to the following retiring chairmen of Research Committees:

R P S Black, E I duPont de Nemours & Co, Inc, Committee RA34, Bleaching.

A T Clifford, Riegel Textile Corp, Committee RA55, Nuclear Radiation.

H B Goldstein, Warwick Chemical Div, Sun Chemical Corp, Committee RA56, Evaluation of Finishes for Resistance to Staining and Soiling.

E G Wiest, E I duPont de Nemours & Co, Inc, Committee RA30, Analytical Methods.

The following were unable to be present and their certificates will be presented at meetings of their individual sections of AATCC:

R E Derby Jr, The Derby Co, Committee RA36, Color.

C W Saalfrank, Sandoz, Inc, Committee RA53, Colorfastness to Pleating.

J W Schappel, American Viscose Corp, Committee RA57, Soiling of Carpets.

J M Straley, Tennessee Eastman Corp, Committee RA33, Colorfastness of Textiles to Atmospheric Contaminants.

J T Taylor, Rohm & Haas Co, Committee RA51, Nonwoven Fabrics.

Ruby K Worner, Southern Utilization Research and Development Division, Committee RA63, Water Resistance of Fabrics.

COMMITTEE RA68, DETERMINATION OF ODOR IN RESIN-TREATED FABRICS———P J Fynn, chairman, reported as follows:

"The January 18 meeting was well attended and enjoyed excellent participation in the discussion of a proposed interlaboratory test on a method of selecting a panel for sampling odors evolved from fabric finishes. A contribution was made by representatives of several finishers of the methods they are currently using.

"Interlaboratory tests will be set up by a steering committee utilizing some of the proffered techniques.

"Eventually, any quantitative method of detecting components of objectionable odors (formaldehyde, amine, etc) must be correlated with experience by means of the sense of smell, so the Committee wishes to continue investigation of methods of panel selection and utilization."

COMMITTEE RA56, EVALUATION OF FINISHES FOR RESISTANCE TO STAINING AND SOILING———H B Goldstein, retiring chairman of Committee RA56, reported the following:

"Carlo DeMarco was appointed chairman, replacing Herman Goldstein, whose three-year term expired.

"The Committee on the Evaluation of Finishes for Resistance to Staining & Soiling reviewed the results obtained from an interlaboratory study concerned with wet soiling during commercial laundering. Contrary to a previous study involving home laundering, the evidence presented clearly indicated that, under the conditions used, some fabrics and finishes have a definite tendency to pick up soil. The next phase of work will be concerned with the development of a laboratory procedure which will give the same degree of soiling as obtained by commercial laundering.

"The chairman reviewed a proposal calling for the use of a soiling index as a means of determining resistance to staining by oily materials. This method consists of applying common staining materials in a predetermined manner and evaluating the degree of residual stain after wiping with a dry tissue and after wiping with a tissue saturated with a suitable solvent. The Committee agreed to initiate another interlaboratory test for the evaluation of the index method.

COMMITTEE RA63, WATER RESISTANCE OF FABRICS———G A Slowinske, chairman, presented the following report:

"The Water Resistance Committee held a well-attended meeting yesterday. The members present unanimously decided to recommend a number of revisions in the test procedures appearing in the *AATCC Technical Manual.* The decisions to do so were made as a result of discussions, and reviews of previous studies by individual members.

"Specifically, the Committee recommends to TCR that:

1) The Tumble Jar Dynamic Absorption Test, the Launder-Ometer Dynamic Absorption Test, and the Static Immersion Absorption Test (Methods 70B-1952, 70A-1958, and 21-1957 respectively) should include a footnote stating that a suitable wringer device is the 'AATCC Motorized Wringer' manufactured by the Atlas Electric Devices Co.

2) The description of the wringer device for the two Dynamic Absorption Tests and the Static Immersion Absorption Test (Methods 70B-1952, 70A-1958, and 21-1957) should include stipulations that the squeeze rolls be 11 to 12 inches in length and the dead weight load be 60 lbs ± one lb.

3) The footnotes concerning blotters for the two Dynamic Absorption Tests, the Static Immersion Absorption Test, the Impact Penetration Test, and the Rain Test (Methods 70B-1952, 70A-1958, 21-1957, 42-1957, and 35-1952 respectively) should be changed as follows:

a) Delete the references to the D L Ward Co and the Joseph Parker Co, so as to leave the Standard Paper Manufacturing Co as the sole supplier of the blotting paper.

b) Specify that the pipette used to measure absorbency be capable of delivering one cubic centimeter of water in 13 to 19 seconds.

4) Delete all references to 'alternative' in connection with the Launder-Ometer Dynamic Absorption Test (Method 70A-1958).

5) Specify the use of distilled water in the Static Immersion Absorption Test, the Impact Penetration Test, and the Spray Test (Methods 21-1957, 42-1957, and 22-1952 respectively).

"In summary, these Committee recommendations, if acceptable to TCR, will result in revisions of six of the seven water resistance test methods listed in the *Manual*. The procedure for the seventh method, the Hydrostatic Pressure Test 18-1952, stands unchanged.

"The future program of the committee includes:

1) Contacts by Mr DeMarco of the QM with the Atlas Electric Devices Co in order to insure that the wringer roll hardness conforms to requirements of the Army Quartermaster.

2) Additional studies of a detailed calibration technique for the Tumble Jar Dynamic Absorption Test Method 70B-1952, submitted by Mr DeMarco of the QM.

3) An interlaboratory study of an aluminum tumble jar for Dynamic Absorption Test Method 70B-1952. The jars will be supplied by the QM at Natick, Mass. The cooperating laboratories are:

a) The QM Laboratory at Natick
b) Ciba Co, Inc
c) E I du Pont de Nemours & Co, Inc
d) Warwick Chemical Div, Sun Chemical Corp

This aluminum tumble jar study is especially important since a replacement is needed for the present glass or porcelain tumble jars which are no longer available.

"The Committee secured a new member, J Michael May, Ciba Co, Inc, as a result of approvals by TCR and ECR. We immediately assigned Mr May the job of secretary. He succeeds Carl Bellwood, whose three-year term expired.

"Finally, I wish to state that the Committee's roster is being revised as a result of a form letter I sent out on December 15. The responses indicated that 15 members (out of an original list of 23) wished to remain on the Committee."

A motion was made and seconded that the recommendations of Committee RA63 be accepted. The motion was adopted.

COMMITTEE RA60, COLORFASTNESS TO WASHING——— Chairman V D Lyon reported as follows:

"At our meeting on Wednesday, January 18th, the results of the recent TCR letter ballot were reviewed. *Item one,* involving the optional use of one-pint metal cylinders in test methods 36-1957 and for the IA test in method 61-1960, was unanimously approved. *Item two,* which recommended the use of cotton effect fiber only for determining staining in the IIIA & IVA tests of method 61-1960, was approved by a vote of 74 to 6 with 12 not voting. Three negative votes were returned with comments which were reviewed. These members believed that the multifiber cloth should be specified. Since the use of multifiber cloth is still optional in the method, it was the feeling of the Committee that individuals running the test can use the method which best fulfills their needs.

"All of the test methods bearing a date of 1958 or earlier were reviewed and the Committee unanimously recommends the following changes for the *1961 Technical Manual:*

1) that Standard Method 36-1957, Wash Test for Characterization of Textile Colorants, be re-affirmed;

2) that Tentative Method 83-1957, Colorfastness to Alternate Light Exposure and Washing, be changed to Standard Method 83-1961; and

3) that Tentative Method 87-1958, Colorfastness of Textiles to Industrial Laundering, be changed to Standard Method 87-1961.

"The Committee is planning interlaboratory tests to determine if the present 61 series of accelerated tests covers all levels of washability. It is planned to restrict the work to fabrics in the IIA and IIIA levels, and to home-type washing machines. A steering committee will meet during the first part of February to arrange details of the survey, which will then be submitted for approval of the entire Committee."

A motion was made and seconded that the recommendations of Committee RA60 be accepted. The motion was adopted.

COMMITTEE RA23, COLORFASTNESS TO WATER——G J Greendonner Jr, chairman, made the following report:

"At our meeting of January 18, 1961, we adopted temporary chlorinated swimming pool water test control standards for the classification of our work.

"The test methods for Colorfastness to Water, Sea Water and Chlorinated Pool Water will in the future list the additional equipment now available for use in these tests.

"We have outlined several tests as a continuation of our study of the chlorinated swimming pool water fastness problem.

"Norman Simcoe has been elected secretary of this Committee."

COMMITTEE RA45, IDENTIFICATION OF FINISHES ON TEXTILES———Chairman T D Miles reported as follows:

"The Committee is continuing to follow its plan to develop separate identification methods for each of the general finish categories defined in AATCC 94-1959T. With the methods for category #2 antibacterial, mildewproof finishes recently approved by the Technical Committee on Research, RA45 is giving its attention to two other categories: flame retardants and sizes.

"At yesterday's meeting, the results of an interlaboratory test of the first draft of a method for durable flame retardants were discussed. Five laboratories submitted test results. Each received two unknowns. Three of the labs identified both of these unknowns correctly and the other two labs identified one of the two correctly. It has been agreed that another draft of this method will be circulated which will include the suggestions made by the members during yesterday's meeting.

"Our first step towards developing a method for sizes was to find out what the needs of the textile industry are in this respect. A general questionnaire on the size category has been circulated to laboratories representing dyehouses, converters, chemical manufacturers, greige goods manufacturers, commercial testing laboratories and retail stores. The Committee would like to express its

appreciation for the generous response to this questionnaire. Among the questions was the following: 'List any sizing materials for which you feel a rapid qualitative method for identification would be useful.' Among the compounds listed were: styrene maleic adducts, polyvinyl alcohol, acrylate copolymers, nonsaponifiable waxes, CMC, hydroxymethyl cellulose, dextrine, polyvinyl butyral. Louis C Kolodny of J P Stevens & Co, Inc has kindly offered to supply the Committee with a series of sized fabrics of various fiber types for the preliminary analysis."

COMMITTEE RA64, WEATHERING OF TEXTILES———Chairman L L Heffner reported the following:

"A total of eight attended the meeting. The report of the subcommittee on the calibration of accelerated weathering devices recommended the use of a 1/16" polymethyl methacrylate plate colored with Quinoline Yellow (CI Acid Yellow 3) for this purpose. Formerly a ⅛" thick plate had been considered. As the thicker plate requires an induction period of approximately 40 standard fading hours to develop a linear relation between energy input and fading, it is not suited for calibration of energy input in single cycles, ie, one change of carbons of accelerated weathering machines. It has been found that the 1/16" plate practically eliminates the induction period required for the thicker plate.

"Accordingly it was recommended that the 1/16" plate be used in a tentative method for calibrating carbon arc machines for rate of energy input. For the present, the tentative method will be confined to carbon arc sources. Future investigations of Xenon sources of radiation and other possible methods of calibration are planned.

"Committee approval was then given to the preparation of a tentatively suggested AATCC test method for the accelerated weathering of textiles and for a tentative method for the calibration of accelerated weathering devices based on a carbon arc source of radiation, using the 1/16" polymethyl methacrylate plate previously referred to for this purpose.

"These suggested test methods will be distributed for study to members of the Committee and others who may be interested before our next meeting. If approved at our next meeting, Committee publications will be prepared on these methods.

"In this connection Frank Rizzo, secretary of our Committee, reported on a new revision of Method 5804 of Federal Specification CCC-T-191b for the accelerated weather testing of textiles. This revised method also employs the 1/16" yellow polymethyl methacrylate plate as a calibrating medium and in addition makes changes in temperatures, cycles and rate of rotation of the specimen rack.

"Following requests made at our last meeting, Kenneth H Barnard prepared for the Committee a review of the literature on the natural and accelerated weathering of textiles. Further study of Mr Barnard's report of his literature survey will be made by the Committee. Following this, it is planned to prepare a committee publication of the literature on the weathering of textiles."

COMMITTEE RA61, WASH AND WEAR———C Clutz presented the following report for G M Richardson, Committee chairman:

"The investigation of new procedures for evaluating 'wash-and-wear' characteristics of fabrics and garments has progressed favorably during the past year. Alternate procedures for evaluating the smooth appearance of fabrics and in addition methods for rating the appearance of creases and seams have been under study.

"Before outlining the test work of the Committee, it is desirable to recall the Committee's aims and objectives as developed by its members. The first need, and this has been met by the Tentative Test Method 88-1960 'Appearance of Fabrics After Home Laundering,' was to provide a critical test for evaluating the smooth appearance of fabrics after home laundering. Beyond that there is an industry need for a method to measure the same characteristic but do it on a less critical scale such as might be obtained by using overhead diffuse lighting. The ultimate objective is to evaluate the appearance of garments or consumer products (includes other than apparel), excluding those properties that may properly be in the scope of other AATCC research committees. Once an overhead diffuse lighting method is developed it may be used for evaluating various garment properties, such as creases, seams and pleats. By providing methods for evaluating the component parts of consumer products, this committee can be of great service to the textile industry, including the cutting up and marketing segments.

"Three programs have been active during the year, namely one aimed at the development of a diffuse lighting method for the smoothness evaluation of fabrics, one aimed at developing a method for evaluating the appearance of creases and seams (pleats later) and one involved in observing the progress made by commercial firms which are developing instrumental methods. These will be discussed separately in the following paragraphs.

"An interlaboratory test, using a variety of fabrics, has been conducted wherein the washing and drying procedures are those described in Tentative Test Method 88-1960; however, the fabrics were evaluated using diffuse overhead lighting and comparative photographs, made under the same conditions. The results of this test are not yet complete but two things appear to be indicated, based on incomplete data. These are, first, that overhead diffuse lighting, using comparative photographs, can be used for evaluating vertical hanging samples, and second, the scope of the present Tentative Test Method 88-1960 insofar as equipment specifications are concerned is too broad. There are indications that a test is required to narrow the specifications on permissible equipment for laundering and drying test specimen.

"Another interlaboratory test is being conducted to develop methods for evaluating creases and seams. Creases are being observed by exposing them to a strong side light which causes the creases to cast a shadow. Photographic standards for comparison are being used. Both double and single needle seams are included in the test. Seams are observed under diffuse overhead lighting, the same as that under study as an alternate method for the smoothness evaluation of fabrics. The results of this test are being delayed until agreement can be reached on diffuse overhead lighting procedures in the smoothness test procedure and a narrowing of the equipment tolerances for laundering and drying test specimen. As soon as these two areas are defined this test should progress rapidly.

"In order to keep abreast of current developments, this committee has observed the progress being made by commercial firms in developing instrumental methods. These include Cluett Peabody's 'Smoothness Evaluator', the Hunter 'Wrinklemeter' and Du Pont's 'LAP' method.

"The program for 1961 will include

primarily work aimed at developing methods for the evaluation of the appearance of garments or consumer products. Plans include the development of tests for component parts such as fabric smoothness, appearance of creases, appearance of seams and later the appearance of pleats. Refinements will be made in laundering and drying procedures, primarily the specifications for both the permissible dryer and washer will be narrowed so as to make the test more reproducible. It is hoped that with the completion of this program a method will be available for evaluating garments and consumer products. Such a method is planned to provide procedures for evaluating component parts. These may then be used to rate garments or parts as desired by the tester."

Following the recommendation of Committee RA61, Mr Clutz made the following motion:

"That the alternate method for evaluating the 'wash-and-wear' appearance of fabrics incorporating diffuse lighting conditions be submitted to TCR ballot."

The motion was seconded and adopted.

COMMITTEE RA35, DAMAGE CAUSED BY RETAINED CHLORINE——A C Nuessle, chairman, presented the following report for Committee RA35:

"During the past year our major effort has been directed toward further improving the reproducibility of the Chlorine Damage Test 92-1958. To this end, interlaboratory tests were run on three new 'standard' fabrics representing low, moderately low, and moderately high damage. Correlation between the sixteen participating laboratories was rather encouraging, as is illustrated in the following table.

Standard Fabric	*Mean value*
Ia	44 ± 11
Ib	17 ± 11
II	3 ± 6

A similar degree of precision had been obtained on the earlier high standard in two series run several years ago: fifteen laboratories averaged 73± 11 in one case, and eleven laboratories averaged 69±7 in another. Those earlier data were especially gratifying when we consider that that particular fabric was drifting upward in value while the tests were being made. So far as we know, the newer standards are not drifting.

"Looking over all of the above results, and bearing in mind that the chlorine damage test has always been more reproducible at the high and low ends of the damage scale, we may conclude that a reasonably satisfactory degree of reproducibility is now being obtained in the middle range as well.

"However, these results do not tell the whole story. In most instances, precision *within* a laboratory is still considerably higher than between laboratories. Thus on fabric Ia, one laboratory reported replicates of 28, 26, 24, 30, 30, while another reported values of 42, 46, 47. It is evident that certain variables that are under sufficient control within a laboratory are nevertheless variable between laboratories. We have concluded that the difference in results is due not to a single large variable but rather to the cumulative effect of a number of small variables.

"A more peculiar difficulty cropped up in the case of fabric Ib. Unlike the other three standard fabrics, Ib has proved to be variable even within a single laboratory. In one instance, replicate determinations ran 27, 31, 9, 23, 15. Two other laboratories have reported a similar spread of data. This may to some extent reflect a peculiarity of that particular fabric, and we are somewhat less concerned about it than we are with bringing the various laboratories in line on fabric Ia. An additional quantity of standard fabric (similar to Ia) is being prepared for further study.

"Currently we are attempting to improve interlaboratory precision by tightening up on the procedural details. Naturally we would like to do this without making the test more complicated. In the latter connection, we should perhaps emphasize the fact that we did not set out purposely to design a complicated test—the complications have gradually been introduced where necessary in order to obtain sufficient reproducibility. The question of reproducibility has been, and still remains, a primary objective.

"There are, of course other objectives. One of these is the question of correlation with end use. It has been suggested, for example, that AATCC 92-1958 uses too high a concentration of chlorine (0.25%) at too low a temperature (80°F) and that the results are therefore completely meaningless. However, recent tests have shown that very similar results will be obtained if the concentration of chlorine is reduced to 0.05% and the temperature is raised to 140°F. Test data on the four standard fabrics ran 85, 50, 14, 0 using 0.25%/80°F, versus 83, 41, 16, 0 using 0.05%/140°F. As the latter conditions are only slightly 'accelerated', we may conclude that the chlorination step in AATCC 92-1958 is more practical than some persons have supposed.

"It should be noted that, in all of the above, the test fabrics were subjected to a scorching step, 30 seconds at 365°F. There are indications that this is more severe than the average end-use procedure. However, further study will be required to resolve the question of whether our conditions are too extreme, or whether they merely provide a desirable margin of safety to allow for more aggressive ironing procedures in end use.

"The Committee has other current objectives, such as consideration of automatic or semi-automatic devices to facilitate the running of the test; standardization of certain pieces of equipment such as the wringer; and the like. But efforts in these directions are too preliminary for reporting.

"The subcommittee method of operation, using task groups set up four years ago, is being continued. We are also counting on continued support in the way of personnel and equipment at Lowell."

COMMITTEE RA6, EVALUATION OF CREASING PROPERTIES OF FABRICS——The TCR secretary read the report submitted by Chairman E R Kaswell as follows:

"The Committee on Crease Evaluation has been reactivated and plans are underway for the design of a research program.

"Questions have arisen concerning the variability of data taken on the Monsanto crease angle tester. Messrs Langlais and Harrington of Monsanto have made a statistical analysis of a round-robin test program conducted by Springs Mills. These results are being evaluated. Consideration is being given to the planning of a new meticulously designed round-robin to see if variability in data can be reduced to the minimum. In the future it is agreed that close liaison should exist between the Wash and Wear Committee and our Crease Committee.

"At the next meeting to be held a new chairman will be elected."

COMMITTEE RA34, BLEACHING ——Retiring Chairman R P S Black reported the following:

"The test methods under the jur-

isdiction of this Committee were reviewed.

"It was agreed that it would be requested that the procedures for fluidity and ash be made standard. By this report the TCR is requested to take appropriate action.

"Minor revisions of the absorbency and pH procedures will be considered.

"Procedures for 'Determination of Hydrogen Peroxide in Bleach Baths' and 'Colorfastness to Peroxide Bleaching' were submitted last year but are not in the *1960 Technical Manual*. This will be investigated.

"The 'Determination of Whiteness' was considered. The results of an interlaboratory examination of several cotton samples showed that better methods are needed for standardization of meters presently in use. A procedure was agreed upon for a new interlab sample evaluation."

A motion was made and seconded that the recommendations of Committee RA34 be accepted. The motion was adopted.

COMMITTEE RA32, STATIC ELECTRICITY ON TEXTILES——The report of Jack Turer, chairman, was read by G M Kidder:

"Following the adoption of Standard Test Method 76-1959 for the determination of the electrical resistivities of fabrics, the Committee editorially revised the method for measuring electrical resistivity of yarns (now Standard Test Method 84-1960).

"The difficult problem of measuring the charge actually generated on a fabric rubbed against another dissimilar fabric in movement has been under investigation. The fabrics being tested are cotton and polyester. These are being rubbed against wool, polyethylene and aluminum. All fabrics employed in these measurements are scoured and have the same warp and filling.

"The ratio of charge generated by the polyester and cotton fabrics are calculated from the charge generated for each fabric; also the half-life (the rate of charge decay) for each fabric is determined.

"Reproducibility of results to date have not been consistent for the members running these evaluations. The difficulties appear to be due to individual inconsistencies in duplication of results which may be partly due to the diverse type of instruments used by the various laboratories and the different relative humidities and temperatures employed.

"The development of a standard method of measuring static electricity generated by fabrics in motion is considered important to the textile industry. The Committee will continue its investigations."

COMMITTEE RA38, COLORFASTNESS TO CROCKING——Chairman C R Trommer presented the following report:

"The original mission assigned to the reactivated committee on colorfastness to crocking was to investigate claims of variable test results and, upon proper investigation, to make appropriate recommendations.

"The past several years of work of the Committee has established the fact that the specified method for testing *dry* crocking is fully reproducible and recommends that it be retained unchanged.

"The *wet* crocking test evidenced considerable variation, particularly *between* cooperating laboratories, with relatively good reproducibility *within* any given laboratory. A series of wet crock tests using increasing amounts of water in the white crock square gave an almost parabolic curve with crocking reaching a maximum point and then dropping off as higher amounts of water were used. As a result of broad interlaboratory testing, the Committee wishes to submit the following changes in the wet crocking test for TCR approval.

The current paragraph on wet crocking should be revised as follows:

'For wet rubbing (crocking) tests, thoroughly wet out white testing squares in distilled water and by any convenient means, such as a hand wringer, bring the wet pick-up to 65% ±5% based on the conditioned weight of the dry square under standard conditions before testing. Care should be taken to prevent evaporation from reducing the moisture content below the specified level before the actual crock test is run. The rest of the procedure is the same as the dry crocking test.'

"Interlaboratory tests with eight cooperating laboratories gave a reproducability between laboratories of less than one half unit on the AATCC color transference chart when evaluated by a panel drawn from the Committee.

"The Committee proposes to prepare an article for publication in the *Proceedings* of the AATCC containing the data upon which the above recommended changes have been based.

"The Committee is now working on modified instruments to permit more reliable testing of yarns, small areas in prints, elastic fabrics, and other textiles which present difficulties when using the current instrument.

"Solvent crocking will also be investigated in the future."

A motion was made and seconded to accept the recommendations of Committee RA38. The motion was adopted.

COMMITTEE RA58, STREAM SANITATION——R H Souther, Committee secretary, reported the following:

"The AATCC Committee on Stream Sanitation met January 19, 1961. Minutes of meeting held May 26, 1960 were read and plans for future work was reviewed.

"Percival Theel reported on the National Conference on Water Pollution held at Washington, DC, December 12-14, 1960, which was called by President Eisenhower to set goals toward cleaning up the streams of the Nation. Conclusions of the conference setting forth objectives and research necessary in pollution abatement and our cooperation with The National Technical Task Committee on Industrial Waste were reviewed. A statement by R H Souther for inclusion in the National Conference Proceedings urging more applied research by federal and state agencies on industrial waste problems was briefly discussed.

"With respect to the Bibliography on Textile Waste, Prof Theel will get a list of additional abstracts, including listings from *Chemical Abstracts*, to supplement present bibliography, and circulate to the Committee for review. Messrs Crane and Patton will assist in this work, with possible further additions.

"Thomas H Hart will assist in obtaining information on BOD of synthetic detergents and textile auxiliaries from the chemical industry. This information will greatly aid the textile industry in a better understanding of the necessary treatment methods to reduce pollution loads.

"A Waste Guide for the Synthetic Textiles Industry, similar to those for wool, cotton, and laundering, was authorized, and a committee will be formed to carry out this project.

"All AATCC members interested in the objectives of our Committee are invited to attend our meetings and participate in our various projects."

(*concluded on page 48*)

COUNCIL HIGHLIGHTS

222nd Meeting • January 20, 1961 • Sheraton Atlantic Hotel, New York, NY

ELLIOTT MORRILL, in his new role as AATCC's 15th president, addressed the 222nd meeting of the Council on January 20th as follows:

"In addressing you for the first time as your president, I am not only mindful of the honor you have accorded me, but more to the point, I am keenly conscious of the responsibilities the job entails, and the need on my part to be certain of your wishes and what you want AATCC to represent to the textile and color industries and the public at large.

"Basically, I feel that it is my function to speak formally and officially for AATCC and to always present our story correctly and in a favorable light so as to enhance the prestige of our Association of technical individuals.

"This evening I will address the Metropolitan Section and will discuss in fairly broad terms the aims and objectives of AATCC. In the event you are not present my remarks will be made available to you in the *Proceedings*.

"Allow me at this time to make a few brief remarks that will relate to the conduct of my administration.

"In your portfolio of material you have been provided with is a copy of the Constitution and Bylaws. Rest assured that it is within the framework of the Objectives, Constitution and Bylaws that I will scrupulously conduct the administration for which you have elected me and made me accountable.

"As you know, the Council manages the affairs of the Association, and has full control, subject only to the limitations of the Constitution and Bylaws.

"I feel personally very fortunate to have the staff of National Headquarters to help me. You all know George Paine, and I would like to say formally this is your executive secretary. Glen Kidder has been in attendance and working at the meetings. We have George Mandikos here and Mrs Emma Goodale. The rest of my helpers are volunteer workers and their work is supported by their employers.

"However, the day-by-day and week-by-week work of the Association goes on between Council meetings, and without this expenditure of time, effort and money on the part of dedicated individuals supported by their employers, the work of the Association would grind to a halt.

"In the case of the ninety-odd research committees, which may have the reward of accomplishing something tangible that might end up in a new or improved test method they know will help the industry, there is the satisfaction of completing a job well done.

"In the case of the special committees appointed to do a special job and render a report, this type of thing is seldom capable of producing a tangible reward or even the knowledge that the expenditure of time, effort and money was productive. For example, this morning you will receive a request for approval of the report of the Study Committee on the Intersectional Contest. Adoption of this report will mean that we will have an up-dated and a more effective means of conducting the Intersectional Contest. Not more than a handful of our members will ever realize the amount of work involved in the preparation of this report.

"In the case of Standing and Special Committees of the Council, there is not one member of these committees who is not giving unstintingly of his time and effort.

"In the case of the Executive Committee on Research and the Technical Committee on Research, especially their respective chairmen, they are engaged in what practically amounts to a second full-time job.

"Members of the Executive Committee of the Council must continuously subordinate their personal plans and desires to the needs of the Council because the demands on them for time, travel, money and energy preclude anything else.

"It seems fitting to me that the Council should recognize and understand that these individuals work at the direction of the Council for the best interests of the Association as a whole without compensation or other return. I think that you will agree with me that if they are to perform their services in a climate conducive to good work they need, and should have, your implicit confidence and complete support."

President Morrill then called on T R Smith to present to W G Helmus, retiring president, the AATCC Past President's Certificate.

Mr Morrill then proceeded to introduce the national officers, asking the vice presidents to introduce the Councilors from their Regions. (See Organization Page for list of new officers and Councilors).

* * *

APPOINTMENT OF COUNCIL COMMITTEES FOR 1961——The president presented the Executive Committee's recommendations for chairmen and members of Standing and Special Committees of the Council for 1961, which were approved as follows:

Executive Committee of the Council
E Morrill, *chairman*
A H Gaede — G P Paine
W G Helmus — W S Sollenberger
J H Jones — C A Sylvester
W G Parks — A R Thompson

Executive Committee on Research
C A Sylvester, *chairman*
G S Wham, *vice chairman*
G J Mandikos, *secretary*
F Fortess — H E Millson
P J Fynn — J D Mosheim
W G Helmus — R H Phillips
A I Hultberg

Publicity
E Artim, *chairman*
(Section Publicity Chairmen, ex-officio)

Appropriations
T R Smith, *chairman*
W G Helmus — G P Paine
G O Linberg — A R Thompson

Membership & Local Sections
W G Parks, *chairman*
A H Gaede — G P Paine
J H Jones — W S Sollenberger

Publications
P J Luck, *chairman* — N A Johnson, *secretary*
W D Appel, *editor of Technical Manual*
E Artim — G O Linberg
M A Dahlen — H A Rutherford
W A Holst — P B Stam
G D Jackson Jr — C A Sylvester
A E Johnson — P Theel
E W Lawrence — C A Whitehead

Constitution and Bylaws
W A Holst, *chairman*
W B Griffin — E R Kaswell

Corporate Membership
W S Sollenberger, *chairman*
G P Paine, *secretary*
(Regional vice presidents are vice chairmen ex-officio and chairmen of Section Corporate Membership Committees ex-officio members.)

Technical Programs
T R Foltz, *cochairman* — J Rowatt, *cochairman*

Intersectional Contest
T J Gillick Jr, *chairman*
R E Derby Jr — K A Howry
A H Gaede — L G Johnston

Conventions
E I Stearns, *chairman*
One Year: W B Griffin; R B Taylorson
Two Years: F V Traut; J G Kelley
Three Years: P J Fynn; W H Leyking
Four Years: A G Alexander; J C Cook

Subject and Speaker's Bureau
M J Babey, *chairman* — C A Whitehead, *secretary*
(Section Program Chairmen, ex-officio)

Archives

S M Edelstein, *chairman*
N A Johnson — A R Thompson
E W Lawrence — P J Wood
M J Lydon

Textile Education Committee

L Smith, *chairman*
W C Caldwell — H E Millson
H Y Jennings — R B Stehle

Committee on Individual Membership

H A Stauderman, *chairman*
R P Monsaert Jr, *secretary*
(Section Individual Membership Chairmen, ex-officio)

Student Award Committee

J L Taylor, *chairman* G P Paine, secretary (Heads of Textile Chemistry Department of Colleges with Student Chapters, ex-officio)

Technical Committee on Research

G S Wham, *chairman*
F Fortess, *vice chairman*
G J Mandikos, *secretary*

R C Allison — G O Linberg
W D Appel — L S Little
M J Babey — E M Lynch Jr
C A Baker — J E Meili
K H Barnard — H E Millson
C H Bayley — L R Mizell
J R Bonnar — J D Mosheim
D G Carmichael — J E Norton
V L Chase — A D Nute
E J Chornyei — R H Phillips
H D Clayton — W F Prien
W E Coughlin — F A Prisley
M A Dahlen — C N Rabold
J N Dalton — F J Rizzo
C W Dorn — R E Rupp
C Z Draves — B A Ryberg
B F Faris — C H A Schmitt
K R Fox — F T Simon
E Freedman — G M Smith
P J Fynn — R B Smith
A H Gaede — T R Smith
N F Getchell — R H Souther
H E Hager — P B Stam
J J Hanlon — J G Stass
A K Haynes — R L Stutz
H F Herrmann — C A Sylvester
A E Hirst — A F Tesi
V B Holland — P Theel
W A Holst — L S Thompson
G H Hotte — F Tripp
A I Hultberg — A R Wachter
N A Johnson — J F Warner
J H Jones — H E Wilde
E R Kaswell — M W Winkler
S J Kennedy — P J Wood
J Labarthe — R K Worner
E W Lawrence — C L Zimmermann

Councilors representing local sections or their appointed alternates and chairmen of Research Committees are ex-officio members of the Technical Committee on Research, as are the members of ECR.

The president is an ex-officio member of all Committees (Bylaws, Article III, Section 1). The executive secretary is an ex-officio member of all Committees of the Council (Minutes of the 215th Council Meeting, May 29, 1959), but without vote on the Executive Committee of the Council (Bylaws, Article IV, Section 2).

* * *

CHARTER MEMBERS —— The president noted that there were 49 Charter Members on the membership rolls of the Association. The Executive Committee had voted to recommend to the Council that these Charter Members be exempt from further payment of dues and that they be extended the same privileges as Life Members. The year 1961 is the 40th anniversary of AATCC and the Charter Members will be honored at the National Convention in Buffalo. The Executive Committee had further recommended that the executive secretary be instructed to write to the Charter Members prior to the 1961 Convention advising them of the Council action, should the Council accept the Executive Committee's recommendation.

Council adopted a motion that Charter Members now on the rolls be exempt from further payment of dues and that they be extended the same privileges as Life Members.

* * *

COMBINED REPORT OF ECR AND TCR —— C A Sylvester, chairman of ECR, presented the following report.

"Committee RA68 on the Determination of Odor on Resin-treated Fabrics was considering a proposed interlaboratory test on a method of selecting a panel for sampling odors evolved from fabric finishes.

"Results presented by the Task Group on Wet Soiling (RA56-S2) indicate that a problem exists with regard to pick-up of soil under commercial laundering conditions, by some fabrics and finishes. A laboratory method is to be developed to reproduce the results obtained in commercial laundering. The Task Group on Oil-Borne Stains (RA56-S1) is studying a Soil Index Method for determining resistance to staining by oily materials.

"A newly developed motor-driven laboratory wringer is now commercially available from Atlas Electric Devices Company. This wringer was designed at the request of Committee RA63, Water Resistance of Fabrics, for use in Dynamic and Static Immersion Absorption tests for determining the resistance of fabrics to penetration by water. The Committee has also refined the test procedure for testing the water absorbency of the special blotting paper required in the various water resistance test methods.

"A one-pint metal container for washfastness tests using the Launder-Ometer was approved by TCR following recommendation by Committee RA60, Colorfastness to Washing. The use of cotton effect fibers only for determining staining in the IIIA and IV Accelerated Wash tests (at 160°F) will now be specified in AATCC Tentative Test Method 61-1960T. The use of multifiber test fabric will be optional with certain qualifications.

"Test Control Fabric Standards for evaluating colorfastness to chlorinated swimming pool water have been tentatively selected by Committee RA23, Colorfastness to Water, for its current study.

"TCR has approved an identification method for antibacterial and mildewproof finishes developed by Committee RA45, Identification of Finishes on Textiles. This will be incorporated into AATCC Tentative Test Method 94-1959, Analysis of Finish on Textiles.

"Committee RA64, Weathering of Textiles, is currently evaluating suggested test methods for accelerated weather testing of textiles and for calibration of accelerated weathering machines. The Committee is also planning to publish a survey of the literature on natural and accelerated weathering of textiles.

"Progress is being made toward the development of procedures for evaluating the 'wash-and-wear' performance of garments and consumer products. Work is also progressing on the development of methods for creases and seams. The proposal of an alternative method for evaluating the appearance of 'wash-and-wear' fabrics after home laundering, using diffuse overhead lighting, will be subjected to TCR letter ballot.

"The Committee on Damage Caused by Retained Chlorine (RA-35) reported that the degree of precision of the chlorine-retention test has been improved as shown by interlaboratory tests on four selected fabrics covering the range of chlorine damage. Attempts are also being made to correlate the test with end use.

"The Committee on Bleaching, RA34, recommended that the test methods for fluidity and ash content be raised from "tentative" to "standard". Minor revisions of the test methods for absorbency and pH will be considered. The Committee is currently investigating a proposed test method for determining whiteness.

"Committee RA32, Static Electricity on Textiles, is currently working on the difficult problem of measuring the charge actually generated on a fabric rubbed against another dissimilar fabric in movement. The development of a standard method of measuring static electricity generated by fabrics in motion is considered important to the textile industry.

"The Committee on Evaluation of Creasing Properties of Fabrics (RA6) has been reactivated to consider certain questions which have arisen concerning the variability of data taken on the Wrinkle Recovery Test.

"The test for dry crocking has been proved reproducible by the Committee on Colorfastness to Crocking

(RA38). After considerable interlaboratory testing the Committee is proposing a refinement of the wet crocking procedure. The revised procedure calls for wetting out the white testing squares in distilled water and adjusting the wet pickup to 65% ± 5% based on the conditional weight of the dry square under standard conditions before testing.

"The AATCC Committee on Stream Sanitation had been represented at the National Conference on Water Pollution held December 12-14, 1960 in Washington, DC, which had been called by President Eisenhower for the purpose of setting goals toward cleaning up the streams of the nation. Plans have been formulated for the publication of a Waste Guide for the Synthetics Textile Industry.

"All AATCC representatives to other organizations for 1960 were confirmed for reappointment in 1961 by ECR.

"In order to make it possible for some research committee personnel to receive recognition for their active participation and generous contributions to the work of more than three research committees, ECR wishes to propose an amendment to the Bylaws, Article IV, Section 4, line 9 to include the word "voting" before the word "member". Thus the sentence involved will then read "No member may be chairman of more than one active research subcommittee at one time, nor a voting member of more than three active research subcommittees.

"ECR discussed Fred Fortess' report analyzing the technical activities of AATCC which would serve as a basis for future planning in this important area of AATCC's scope. ECR will hold a special meeting in March to consider this study more thoroughly."

A motion was made and passed that the amendment to the Bylaws proposed by Mr Sylvester be referred to the Committee on Constitution and Bylaws and subsequently to letter ballot.

Mr Sylvester stated that Certificates of Service had been presented to retiring members of ECR and chairmen of research committees at the TCR meeting the previous day. These were:—

E Morrill—Member of ECR

S J Kennedy—Member of ECR

R P S Black—Committee on Bleaching

A T Clifford—Nuclear Radiation

R E Derby Jr—Committee on Color

H B Goldstein—Evaluation of Finishes for Resistance to Staining and Soiling

C W Saalfrank—Colorfastness to Pleating

J W Schappel—Soiling of Carpets

J M Straley—Committee on Colorfastness to Textiles to Atmospheric Contaminants

J T Taylor—Committee on Non-Woven Fabrics

E G Wiest—Committee on Analytical Methods

R K Worner—Committee on Water Resistance of Fabrics

* * *

STUDY COMMITTEE ON THE INTERSECTIONAL CONTEST——— A motion was made and adopted to accept and approve the report of the Study Committee on the Intersectional Contest. This report appears on pages 44-47 in this issue of *Proceedings*.

* * *

PROPOSED AMENDMENT TO THE CONSTITUTION———The proposed amendment to the Constitution had been referred to the Committee on Constitution and Bylaws at the previous Council meeting on November 18, 1960 to modify Article V, Section 2, by deleting "the Past President" and substituting "each Past President for the four years following the expiration of his term of office as President". It was intended to be effective as of December 31, 1960, and to be without effect on the Council membership of those past presidents now serving on the Council, whose terms of office as president expired prior to that date.

W A Holst, chairman of the Committee on Constitution and Bylaws, stated that the Committee had agreed, and secured the approval of A H Gaede, Original Proponent, that the proposed amendment should include specifically its limitation to the president and future past presidents so that the proposed amendment would read as follows:

Article V, Section 2.—Delete the words "the Past Presidents" and insert "each Past President whose term expired prior to December 31, 1960, and each subsequent Past President only for the four years following expiration of his term of office as President",———

A motion was made and adopted that the proposal to amend the Constitution be approved.

* * *

MEMBERSHIP AND LOCAL SECTIONS———W G Parks, chairman of the Committee on Membership and Local Sections, stated that as of May 1, 1960 there were 6979 members of the Association. The net gain through January 6, 1961, was 328, making a total of 7,307 members as of that date. The Membership Committee had approved 177 applications and had seven applications under review.

* * *

PUBLICATIONS———P J Luck, chairman, stated that a number of improvements had been made by the Publications Committee. W D Appel, *Colour Index* co-ordinator, had reported to the Committee on the progress of the *Colour Index* Supplement. P Theel had reported that the manuscript for the revised edition of "Analytical Methods for a Textile Laboratory" was being processed. V S Salvin had been appointed by the Committee to the American Dyestuff Reporter Award Committee. G O Linberg had reported that 476 copies of the "Vat Dye Monograph" had been sold since the latest promotional effort was started in 1959. The executive secretary reported that 92 sets of the *Colour Index* had been sold in 1960. Total sales were 972 sets. Inventory was 1,057 sets.

* * *

APPROPRIATIONS ——— Appropriations Committee Chairman T R Smith presented a request for funds in amount of $1,748.50, which had been approved by the Appropriations Committee for printing the Convention Manual, the Rules and Regulations of the Intersectional Contest, a leaflet to Senior Members covering provisions for submitting nominations for the Olney Medal, a reprint of the membership promotion leaflet "Do You Belong", and membership application forms and envelopes. The appropriation was approved.

* * *

CONVENTION RESERVE—At the 221st Council meeting, it was voted to place a ceiling on the Reserve for Conventions and that the excess amounts be placed in a contingent fund, the accounting procedures to be discussed with Price Waterhouse & Co.

Following a report at this latest meeting by Arthur R Thompson, AATCC treasurer, in which he quoted from a letter he had received from Price Waterhouse & Co, a motion was adopted that funds in excess of the $20,000 ceiling on Reserve for Conventions account be maintained in that account to be appropriated by Council as desired, and further, that any convention losses reducing the $20,000 reserve will be restored from subsequent convention gains until the fund equals $20,000, with any excesses to be placed in the "free" reserve.

REPORT OF THE STUDY COMMITTEE ON THE INTERSECTIONAL CONTEST

The Council at its 222nd meeting, January 20, 1961, in New York, NY, voted to accept the report of the Study Committee on the Intersectional Contest. A discussion and recommendations of the Committee is herewith presented together with the Official Rules for Intersectional Technical Paper Competition.

INTRODUCTION

THE Council, in session at its 212th meeting, October 30, 1958, at Chicago voted "that a special committee be appointed by the president to review the whole subject of the Intersectional Contest and make its recommendations to the Council." G O Linberg, then president, appointed the following Committee in November 1958, to carry out the instructions of the Council:

Thomas J Gillick Jr, *chairman*
Western New England
Leonard J Armstrong
Mid-West
William B Griffin
Southeastern
Thomas H Hart
Delaware Valley
Joseph D Mosheim
South Central
Albert H Rant
Western New England
Frank J Rizzo
Northern New England
Neal A Truslow
Piedmont

The Committee decided initially to carry out a fact-finding activity and prepared questionnaires based upon the following points:

1) Is the Intersectional Contest a worthwhile activity for AATCC?
2) Should it be continued?
3) If continued, what factors should be considered so that the Contest would provide maximum value to the Association, its members individually, the participating sections, the participating members and the industry?

The questionnaires were mailed to sectional chairmen, sectional research committee chairmen, sectional committee chairmen for the Intersectional Contest and 1958 and 1959 Intersectional Contest judges. Beyond this, the wide geographic coverage represented by the Committee provided a large number of individual member contacts, who were also polled.

From the information obtained, it was possible for the Committee in session September 12, 1959, to conclude that the overwhelming result of the fact-finding was as follows:

1) Yes, the Contest is a worthwhile activity of AATCC.
2) Yes, it should be continued.
3) The stature, importance and general tone of the activity required upgrading and new and detailed rules and regulations for the operation of such a contest were needed.

To accomplish the aims of (3) above, the subject was further broken down into areas of study and individual committee members accepted assignments on these items. Written reports on these assignments were submitted and discussed in Committee session November 19, 1959. The areas of study were as follows:

A) Purpose and scope of the Contest.
B) Selection of subject matter for a paper.
C) Qualifications for and selection of judges.
D) Preparation of and presentation of papers.
E) Mechanics of judging and rating of papers.
F) Awards.

It became apparent as a result of the study that recommendations to the Council by the committee should include a new set of rules and regulations. Accordingly this report which has been prepared, edited and revised, and approved for submission by the Committee consists of two parts: 1) Discussion and Recommendations and 2) Rules and Regulations. Each of these parts, in the opinion of the Committee, can be utilized individually for the purposes intended.

It must be appreciated that opinions differed in many cases with respect to any part of the report and it would be incorrect to state that this report represents the unanimous opinion of each member of the Committee concerning every detail; however, it can be fairly stated that in all respects it represents the majority opinion of the Committee.

DISCUSSION AND RECOMMENDATIONS

A) PURPOSE AND SCOPE——There can be no question that the primary purpose of any activity sponsored by the Association should be the furtherance of the objectives of the Association contained in Article II of its Constitution.

It is the opinion of this Committee that the Intersectional Contest has measured up to these objectives in the past. However, in keeping with changing conditions in the Association and in this industry, and in order to provide a more formal, scientific, and professional aspect to further the objectives of the Association, it is the recommendation of the Committee:

1) that the Association sponsor an annual technical paper competition between the sections of the Association;
2) that this activity be known as "The Intersectional Technical Paper Competition";
3) that the competition be a feature portion of the Technical Program at the annual National Convention of the Association.
4) that a committee of the Council be appointed and charged with the proper direction of the competition.
5) that definite responsibilities in connection with "the proper direction of the competition" be assigned to the Committee as shall be provided for further on in this report.

B) SELECTION OF SUBJECT MATTER FOR A PAPER——As best can be determined, selection of subject matter for a paper has followed no definite formula. In most cases it has consisted of finding an individual who had started work on a given subject and whose company was willing to release the subject to the local section for the use of the section. In most cases the individual involved then became chairman of the section's Intersectional Contest Paper Committee. In a few cases, sections have appointed their own standing research committees to review topics, choose subject matter, appoint Contest committees and provide a central focal point and clearing house for the pooling of sectional talent and industrial laboratory facilities.

Over one hundred excellent papers have been prepared and presented by either of the foregoing methods.

These papers have provided a rich contribution to textile literature and this contribution is fully recognized and appreciated by this Committee. However, a survey of this literature will show that certain sections have been consistent and valued contributors, yet other sections have not. A definite trend will be noted also toward subject matter representing geographic interests; that is, topics on wool and wool processing from New England, on cotton and cotton processing from the Southern regions, on dyestuffs and their application from Delaware Valley and so forth.

This Committee recognizes the tremendous and virtually unacknowledged contribution that has been made over the years by the industrial organizations whose employees have participated in the various Intersectional Contests. Yet we cannot help but question whether this trend toward parochialism and the pitting of the "strong" versus the "weak" has really been to the best interests of the Association and led to the virtual elimination of the smaller sections from participation in the program.

It is the opinion of this Committee that steps can be taken which will 1) provide an opportunity for more sections to participate, 2) support the programs of the Executive and Technical Committees on Research, 3) be in the best interests of present or new Corporate Members, 4) acquaint more individual members with the overall technical and research programs and aims of the Association.

Therefore it is recommended that: 1) the Executive Committee on Research provide a list of important subject matters which require research activity to solve or enlighten industry problems, this list of subjects to be made available, at least yearly, to the Competition Committee of the Council for suggested study to all Sections; and 2) the Executive Committee on Research be encouraged to consider the Technical Paper Competition as a means for supplementing its activities, particularly in the task force and test method areas.

C) QUALIFICATIONS FOR AND SELECTIONS OF JUDGES——— From the suggestions made to this Committee it would appear that in addition to having the wisdom of Solomon, a judge should be "mature", experienced, knowledgable in a broad field, research oriented and in a practical production position. Knowing full well its limitations against these requirements, the Committee recommends that judges be selected as follows:

1) that the chairman of each Section appoint three (3) senior members annually to a Judges Committee to collaborate on the judging of the papers. Whenever possible the membership of the Judging Committee should represent research, manufacturing and marketing pursuits. Each Judging Committee should appoint one of its members to act as sectional judge, who shall vote for the section at the time and place of the competition, the other two serving as his alternates. Each sectional chairman shall confirm such appointments to the National Competition Committee chairman in writing.

2) A chief justice be appointed from the membership of the Committee of the Council [paragraph A (4)], and that he be charged with the proper conduct of the meeting of the judges within the intent and scope of paragraph A (5).

D) PREPARATION AND PRESENTATION OF PAPERS———The major portion of the Committee's activity under this subtitle is represented by the recommended Official Rules for the Intersectional Technical Paper Competition, which rules form a part of this report.

It is recommended:

1) that the Official Rules for the Intersectional Technical Paper Competition which form a part of this report be adopted,

2) that the verbal presentation be accorded a prominent position in the technical program of the National Convention so as to contribute to the technical prestige of the Association,

3) that the judges be formally seated in a body during the presentation, and

4) that the detail of carrying out these recommendations by liaison between the Convention Committee and the Competition Committee be established within the intent and scope of paragraph A (5).

E) MECHANICS OF JUDGING AND RATING PAPERS———Considerable criticism has been directed at the many and varied processes of judging that have been used, and the method of ratings by point systems as well as toward the other aspects of judging and rating. The lack of clarity of meaning as to "originality", "scientific value" and "practical value" has also resulted in some criticism. To overcome these objections the Committee has endeavored to set up a standard method of rating. It has provided definitions for the several categories of rating and subdivisions have been created which it is hoped will enable the judges to be guided in their decisions without limiting judgment in any way.

It is recommended therefore:

1) that each paper be judged and rated with respect to the others on the basis of originality, scientific value, practical value and presentation, written and oral,

2) that the detailed instructions as to ratings as shown in the attached rules be adopted, and

3) that the following definitions be used for the categories—

"Originality shall refer to the discovery of a new fact or facts and the correct interpretation thereof;

"Scientific Value" shall refer to the revision of accepted conclusions, theories or laws in the light of newly discovered facts;

"Practical Value" shall consist of the application of new facts or revised conclusions, theories or laws.

F) AWARDS———The Committee is unanimous in its opinion that awards are of prime importance to the competition. The type of award came under considerable discussion with the major emphasis put upon recognition of the individuals who participated in the preparation of an award-winning paper. The current system of monetary awards to the sections placing first, second and third in the competition was recognized as satisfactory but lacking a sense of permanency or individual distinction.

Therefore the Committee recommends:

1) that monetary awards be presented to the sections placing first, second and third in each annual competition,

2) that these awards be made as a feature part of the program of the Annual Banquet, and

3) that at a convenient time but as soon as is practicable after the National Convention, National Headquarters provide a simple but suitably inscribed certificate for each individual participating in the committees for the three award-winning papers; such certificate to be presented to the individuals by the chairman of the award-winning section as he sees fit.

For the Committee,
THOMAS J GILLICK JR
Chairman

OFFICIAL RULES FOR INTERSECTIONAL TECHNICAL PAPER COMPETITION

GENERAL——The Association shall sponsor an annual competition in which the individual sections shall prepare and present technical papers. The presentation will take place at a session or sessions of the technical program held in conjunction with the annual National Convention of the Association. The name of the competition shall be the "Annual Intersectional Technical Paper Competition".

I. PURPOSE AND SCOPE——The purpose and scope of this annual competition shall be in fullest keeping with objectives of this Association as defined in Article II of its Constitution—"To promote the increase of knowledge of the application of dyes and chemicals in the textile industry; to encourage in any practical way research work on chemical processes and materials of importance to the textile industry; and to establish for the members channels by which the interchange of professional knowledge among them may be increased." The competition shall be conducted within the format of these rules under the supervision and control of the Annual Intersectional Technical Paper Competition Committee, which shall be a committee of the Council, consisting of a chairman and five (5) members, one of whom acts as secretary, and one of whom shall be chief justice. The duties of the Committee shall be those assigned by Council or as outlined in the "Report of the Study Committee of the Intersectional Contest".

II. SUBJECT MATTER——The subject matter for a technical paper may be a subject that falls within the scope of paragraph I, and which provides elements of scientific value, practical value, and originality. The subject matter should be such as to require original research and investigation by a representative group of members of a section, which group shall comprise the section's Technical Paper Competition Committee. This Committee may avail itself of help from outside sources, but in all cases the activities of the Committee must be such that the subject matter of the technical paper is the property of the Committee that presents it. It is clearly understood, however, that any patentable disclosures contained in a paper shall of course remain the property of the author or authors as shown in AATCC publication titled "Guide for AATCC Authors and Speakers."

It is not necessary that a section consider only subjects which meet all three qualifications of originality, scientific value and practical value; seldom can a section produce a paper of this type. It may possess but one or two of the above features. However, the more nearly it does fulfill these requirements, the more nearly it will be fufilling the aims of the competition. A paper is acceptable even if a section fails to complete the work as planned or its completed project produces only negative results.

So as to avoid conflict between sections, or with the general aims of the Association at any time, the chairman of a Sectional Technical Paper Committee shall submit to the national chairman at as early a date as is possible [but not later than six (6) months prior to the date of presentation] a tentative title and a brief outline of the contemplated work. This information shall be held in strictest confidence by the National Committee.

III. PREPARATION AND PRESENTATION —— The preparation of manuscript and other details of the technical paper shall be done in accordance with the "Guide for AATCC Authors and Speakers" previously mentioned, and available from National Headquarters. The paper should not be more than 5,000 words, not including charts, graphs, table of contents, biblography, etc.

An original and 26 copies shall be sent to the chairman of the National Intersectional Committee not later than sixty (60) days prior to the date of presentation. Alternatively, duplicating facilities of the National Headquarters may be utilized, and any section desiring to avail itself of this service shall submit an original and two copies to the National Headquarters at least ninety (90) days prior to the date of presentation. These copies are for distribution to the judges, who need a full two months to read, review, and rate the papers.

A 200-word synopsis shall be prepared and five (5) copies submitted to the national chairman at least three months prior to the date of presentation for publicity purposes and convention program use.

The actual oral presentation of the paper is limited to twenty (20) minutes; this means that a condensed version of the paper, emphasizing its high points, shall be given at the meeting: but the paper will be published in its entirety in the *Proceedings* in the *American Dyestuff Reporter*. Please note that the paper is the property of the Association and is not to be released to any other publication. Publicity releases relative to the technical paper and campetition shall be cleared through the chairman of the National Publicity Committee.

The speaker shall be a member of the Sectional Paper Committee and must be a member of the section whose paper he is to present.

In many cases an exhibit may provide an excellent adjunct to the presentation of a paper; however exhibits, if used, shall be considered as part of the presentation, and therefore shall not be on display before the presentation meeting.

IV. JUDGING——Each section shall be entitled to vote one ballot in the judging of the papers, provided that the judge or his alternate is in attendance at all meetings of the judges and at the oral presentations.

Three senior members shall be appointed by the sectional chairman as a judging committee. If possible, one of these should be in a position of production, one in research, and one in marketing. The three members shall collaborate in the scoring of the papers. They shall appoint one of the three to be the judge for the section and the other two shall be his alternates who shall attend and participate in all meetings except the final judging meeting. They are free to call upon anyone for expert advice if desired.

Three months prior to the date of presentation, the sectional chairman shall notify the national chairman the names of the judge and his alternates. One copy of each paper will be provided the Sectional Judge: however, it is to be understood that the scoring shall be a consensus of the Sectional Judges Committee. A ballot for use by the judges will be provided to the Sectional Judges Committee by the chief justice; the papers shall be rated on this ballot according to the following outline:—

The papers shall be rated by the judges in the following categories, with the definitions to clarify them without limiting their judgment in any way.

Originality—Refers to "the discovery of a new fact or facts and the correct interpretation thereof".

1) Selection of problem—
   Has it been given previous wide coverage? Have the results or data been previously partially indicated?
2) Experimental Method—
   Has there been originality used in setting up experiments? Novel methods? Has something been done that would normally have been overlooked?
3) Conclusions—
   Is there a new or original theory proposed? A new outlook or approach to an old subject?

Scientific Value—Consists of "the revision of accepted conclusions, theories or laws in the light of newly discovered facts."

1) Proof—
   Has it proven a theory to explain certain phenomena?
2) Technique—
   Has a new technique or test for investigation been used? Developed? Good quality of data?
3) References—
   Has material, references or new background material been uncovered?

Practical Value—Consists of "the application of new facts or revised conclusions, theories or laws."

1) Pertinence—
   Does it attack a problem considered serious in the industry?
2) Application—
   Does it provide results that can be widely or broadly applied?
3) Ease—
   Does it provide procedures or data easy to use?

Presentation

1) Written—
   Is it neat? Clear?
2) Oral—
   Presented well, without ostentation?

Each category shall receive a total of 30 points maximum, divided into subheadings (3) as above, which are each rated 10—excellent, 8—good, 6—fair, 4—poor, excepting the category "Presentation", which is divided into only two subheadings which are each rated 5—excellent, 4—good, 3—fair, 2—poor.

The properly scored ballot shall be secret, unsigned and sealed for delivery to the chief justice at a meeting of the judges which shall take place before the presentations. All judges shall attend the presentations of the papers, and at a meeting immediately following these presentations, submit their sealed and secret ratings for that portion of the proceedings. The ratings are totalled and a master ballot is prepared by the chief justice. This master ballot is then presented to the chairman of the National Intersectional Competition Committee or, in his absence, to the president of the Association.

AATCC Calendar

COUNCIL

Apr 20-21 (Jack Tar Hotel, Durham, NC); April 20—Council Committees and Research Committees; April 21—(AM) Council Committees and Research Committees, TCR luncheon, TCR (PM), Nominating Committee (5 PM), Council (8 PM)
Sept 26 (Statler Hotel, Buffalo, NY); Council (8 PM)
Nov 17 (Hotel Sherman, Chicago, Ill); Council and Annual Meeting (2 PM)
Jan 26 (Hotel Commodore, New York, NY); Council (10 AM)

NATIONAL CONVENTIONS

Sept 27-29, 1961 (Hotel Statler, Buffalo, NY); 1962 (Atlanta Biltmore Hotel, Atlanta, Ga); 1963—Boston; 1964—New York; 1965 (Conrad Hilton Hotel, Chicago, Ill)

DELAWARE VALLEY SECTION

Apr 14 (Ladies Night—Cherry Hill Inn, Haddonfield, NJ); May 19 (Outing—North Hills CC, North Hills, Pa); Sept 15 (Wilmington, Del); Oct 27 (Beck's); Dec 1 (Beck's)

HUDSON-MOHAWK SECTION

Apr 14 (Waterford, NY—plant tour of General Electric Co's Silicone Div); May 12 (Ladies Night); June 23 (Outing—Antlers Club, Amsterdam, NY)

METROPOLITAN SECTION

April 21 (Kohler's Swiss Chalet, Rochelle Park, NJ—"Importance of Bow and Skew" —Lucille Rea, Simplicity Patterns, and John Robertson, Mt Hope Machine Co); May 19—(Kohler's Swiss Chalet, Rochelle Park, NJ —Ladies Night).

MID-WEST SECTION

April 15 (Schroeder Hotel, Milwaukee, Wis); June 24 (Annual Outing—Ceramí's Island View Resort, Burlington, Wis); Nov 18 (Chicago, Ill)

NIAGARA FRONTIER SECTION

Apr 7 (Joint meeting with Ontario Section, CATCC, St Catherines, Ont); May 18 (Buffalo, NY)

NORTHERN NEW ENGLAND SECTION

May 5-6 (New England Regional Meeting, Jug End Barn, S Egremont, Mass); Sept 8 (Annual Outing); Oct 20 (Quartermaster R & E Command, Natick, Mass); Dec 18 (Motel 128, Dedham, Mass); Jan 19 (Woodlawn Country Club, Newton, Mass)

PACIFIC NORTHWEST SECTION

May 26; Aug 5 (annual outing); Nov 10 (business meeting)

PACIFIC SOUTHWEST SECTION

May 19, Sept 30 (outing), Nov 17

PALMETTO SECTION

Apr 15-16 (Richmond Hotel, Augusta, Ga); June 8-10 (joint outing with Piedmont Section at Grove Park Inn, Asheville, NC); Sept 15-16 (Clemson House, Clemson, SC); Jan 20-21 (Poinsett Hotel, Greenville, SC); April 14-15, 1962 (Francis Marion Hotel, Charleston, SC)

PIEDMONT SECTION

April 22 (Jack Tar Hotel, Durham, NC); June 9-10 (Outing, Grove Park Inn, Asheville, NC); Sept 23 (Hotel Charlotte, Charlotte, NC)

RHODE ISLAND SECTION

May 5-6 (New England Regional Meeting, Jug End Barn, South Egremont, Mass); June 23 (Outing); Sept 15 (Management Meeting); Oct 17 (Dinner Meeting); Dec 1 (Annual Business Meeting)

SOUTH CENTRAL SECTION

Apr 15 (Hotel Patten); June 16-17 (Summer Outing—Riverside Hotel); Sept (Hotel Patten —tentative)

SOUTHEASTERN SECTION

Apr 8 (Atlanta Athletic Club, Atlanta, Ga); June 9-10 (Summer Outing, Radium Springs, Albany, Ga); Sept 9 (Ida Cason Gardens, Pine Mountain, Ga); Dec 2 (Atlanta Athletic Club, Atlanta, Ga)

WESTERN NEW ENGLAND SECTION

May 5-6 (New England Regional Meeting, Jug End Barn, S Egremont, Mass); May 19 (Ladies Night—Rapp's Paradise Inn); June 9 (Annual Outing); Sept 15 (Plant visitation); Oct 27 (Annual Meeting); Dec 1 (Shelton, Conn)

Employment Register

This column is open for two insertions per year, per member, without charge. Blanks may be obtained from, and filed with, the secretary of the Association, Post Office Box 28, Lowell, Mass. It is understood that these will be open to inspection by prospective employers who can obtain further information from the secretary.

61-4

Education: High school, Bielle, Italy; graduate—wool dyeing and chemistry, Textile University, Roubaix Nord, France; St Gal, Switzerland; and Univ of Leeds, England.
Position desired: Dye master in mill treating wool, cotton and synthetic fibers.
Location: Anywhere.
Age: 54; single; complete reference on request together with resume.
3-20, 4-3

61-5

Education: K B Tech Institute, India; City & Guilds of London Institute; specialized training at ICI (England), M/S—Bayer, BASF (Germany); Ciba, Geigy (Switzerland)—1958
Position desired: Wet processing (dyeing, bleaching, printing and finishing); departmental executive—technical personnel.
Location: center of textile wet processing.
Age: 49, married, references on request.
3-20, 4-3

61-6

Education: BS, Rhode Island School of Design.
Position desired: Textile research, development, testing or plant operations.
Location: Northeast acceptable—no restrictions.
Age: 21, single, references.
3-20, 4-3

61-7

Education: Three years, Philadelphia College of Textiles and Science; certificate in paper chemistry from St Joseph's College, Philadelphia, Pa.
Position desired: Technical or sales-service to greige goods, dye-finish or paper mills.
Location: Desire Carolinas, either coast acceptable.
Age: 51; married; excellent references.
4-3, 4-17

TCR Minutes———

(concluded from page 40)

Dr Wham announced that a number of new appointments to Research Committees and two new chairmen had been confirmed by ECR. The list is as follows:

NEW RESEARCH COMMITTEE CHAIRMEN———

S J O'Brien, American Cyanamid Co, chairman of Committee RA57, Soiling of Carpets.

V S Salvin, Celanese Fibers Co, chairman of Committee RA33, Colorfastness of Textiles to Atmospheric Contaminants.

APPOINTMENTS TO RESEARCH COMMITTEES———

Committee RA23, Colorfastness to Water:

Alex F Salerno, American Cyanamid Co

Committee RA31, Antibacterial Agents:

Edward Artim, J C Penney Co, Inc

L F Judge, Procter and Gamble Co

Chester F Koda, Nuodex Products Co

John H Silliker, Swift and Co

I B Steinman, U S Testing Company

John Veltry, Franklin Research Co

Committee RA32, Static Electricity on Textiles:

Claude S Clutz, Celanese Fibers Co

Committee RA45, Identification of Finishes on Textiles:

Louis C Kolodny, J P Stevens & Co, Inc

M Kathryn Wharton, National Bureau of Standards

Committee RA56, Evaluation of Finishes for Resistance to Staining and Soiling:

Edward N Alexander, Crown Chemical Corp

Gale Bleasdell, Hi-Tone Soap Co

Clarence Hooper, Burlington House Fabrics Co

Eugene W Jones, Cone Mills Corp

John M May, Ciba Co, Inc

Robert B Van Tassel

Paul Weinle, Celanese Fibers Co

Ernest B Whitworth, Arkansas Co, Inc

E H Wolfe, General Aniline & Film Corp

Committee RA57, Soiling of Carpets:

Neal A Truslow, U S Rubber Co

Committee RA60, Colorfastness to Washing:

Floyd H Foster, Conmar Products Corp

Helen G Sommar, Celanese Fibers Co

Committee RA63, Water Resistance of Fabrics:

John M May, Ciba Co, Inc

Committee RA68, Determination of Odor in Resin-Treated Fabric:

Thomas C Norman, Cone Mills Laboratory

ADJOURNMENT———There being no further business the meeting was adjourned at 3:40 pm.

Respectfully submitted,
G J Mandikos
Secretary, TCR

Technical Program Completed for NE Regional Meeting

THE New England Regional Meeting, to be held May 5th and 6th at the Jug End Barn, South Egremont, Mass, will be highlighted by some very fine technical papers presented by authorities in their specific fields. The papers on Friday will be confined to the cellulosic field whereas the papers presented on Saturday will be devoted exclusively to the wool and wool-blend field.

The speakers and the papers which they will present on Friday are as follows:

A H Wyld, Imperial Chemical Industries, "Progress in Textile Printing with Selected Fiber-reactive Dyes"

Fernand Schlaeppi, Ciba Co, Inc, "Some Theoretical and Practical Aspects in the Application of Reactive Dyes."

David Reid, Southern Regional Laboratory, United States Department of Agriculture, "Some Recent Work on Chemical Finishing Agents for 'Wash-and-Wear' Cottons."

Saturday's speakers and their papers are as follows:

John F Krasny, Harris Research Laboratories, "Status of 'Wash-and-Wear' Wool Development."

Rolf Gross, Sandoz Ltd, Basle, Switzerland, "New Aspects in the Dyeing of Wool and Synthetic Blends".

Daniel Frishman, Malden Mills, "Recent Developments in the Knitting Field."

This is the first attempt of the three New England sections of the AATCC to hold a regional meeting and a large turnout is anticipated. The Jug End Barn has very fine recreational facilities, including a nine-hole golf course, a heated swimming pool, and horseback riding. Everyone is welcome to attend this two-day meeting.

W George Parks, Univ of Rhode Island, who has recently returned from a trip to Russia, will be the after-dinner speaker on Friday evening. His subject will be "My Personal Experiences Inside Russia."

The revised program for the two days is as follows:

Friday, May 5th—

9:00 AM—Registration

12:00 noon—Luncheon

2:00 PM—Technical session on cellulosic fibers

8:00 PM — Dinner—W G Parks, AATCC vice president, New England Region, guest speaker

Saturday, May 6th—

8:00 AM—Breakfast

9:15 AM—Technical session on wool and wool blends

12:30 PM—Luncheon

2:00 PM—Recreational activities

The chairman of the New England Regional Meeting is Robert D Robinson of the Northern New England Section.

Jug End Barn, South Egremont, Mass

Membership Applications

March 2-15, 1961

NEW ENGLAND REGION

Northern New England Section

Senior

Russell L Willis—Tech rep, Dow Corning Corp, Midland, Mich. Sponsors: J J O'Neil Jr, J J McDonald.

Transfer to Junior

Muriel F Angelil—Dev chemist, industrial work, Carter's Ink Co, Cambridge, Mass.

Rhode Island Section

Thomas A Jamieson—President, dir of chem dept, Technical Service Inc, Warwick, RI. Spcnsors: R W Legge, F L Kendall.

CENTRAL ATLANTIC REGION

Delaware Valley Section

Senior

Arthur A Feldman — Supt, Eveready Thread & Yarn Co, Philadelphia, Pa. Sponsors: J Lord, J A Clark.

Metropolitan Section

Senior

Harry E Flint—Research engr (textiles), Personal Products Corp, Div of Johnson & Johnson, Milltown, NJ. Sponsors: J C Simkevich, D R Roberts.

Erhard R Schober—Tech mgr, Putnam Chem Corp, Beacon, NY. Sponsors: J G Ferguson, T H Hart.

John Twarog—Tex chemist, United States Testing Co, Hoboken, NJ. Sponsors: A J Kellner, W Anderson.

Ernest M Van deWeghe—President, Federal Testing Lab, New York, NY. Sponsors: G P Paine, G J Mandikos.

Junior

Neil A Bloom—Tex lab tech, Klopman Mills Inc, New York, NY. Sponsors: G P Paine, G J Mandikos.

Transfer to Senior

Robert D Feitlowitz—Plant mgr, Dale Rook Fin Co Inc, Div Dubin-Haskell-Jacobson Inc, Ho-Ho-Kus, NJ. Sponsors: J M Schandler, R A Secord.

SOUTHERN REGION

Palmetto Section

Senior

James W Peahuff — Lab tech, Southern Bleachery & Print Works Inc, Taylors, SC. Sponsors: C C Bost, L M Wise Jr.

John T Riggan—Colorist, Carlisle Finishing Co, Carlisle, SC. Sponsors: N R Lufkin, R L Hunter.

Gerald L Solomon—Chemist, J P Stevens & Co, Dunean plant, Greenville, SC. Sponsors: H S Falls, J J Cannon.

Transfer to Senior

Felix H Dover—Production trainee, Riegel Textile Corp, Ware Shoals Div, Ware Shoals, SC. Sponsors: J H O'Neil, E C Roche.

Heyward C Hurt—Administrative asst, Union Bleachery, Greenville, SC. Sponsors: E G Jones, J K Brown.

Piedmont Section

Senior

William T Hutchins—Tech overseer, Highland Park Mfg Co, Charlotte, NC. Sponsors: E H Hartgrove Jr, C Tomasino.

Arnold J Soliday—Chemist, American Cyanamid Co, Charlotte, NC. Sponsors: K D Ballou, C N Whiteside.

Transfer to Junior

John D Turner—Res dept, organic chem, Mooresville Mills, Mooresville, NC. Sponsors: C Neal, H Hedgecock.

Southeastern Section

Associate

Ronald E Koon—Shift suv, finishing dept, Riegel Textile Corp, Trion, Ga.

Transfer to Senior

Hoyt C Peppers—Finisher, woolen & worsted, J P Stevens, Dublin, Ga.

WESTERN REGION

Mid-West Section

Junior

Robert C Stewart—Lab tech, Keystone Aniline & Chem Co Inc, Chicago, Ill. Sponsors: A J Andrews, A W Hunter.

STUDENT CHAPTERS

Auburn University

Charles F Eichelberger—Student, Auburn Univ, Auburn, Ala. Sponsor: J H Cox.

Clemson College

Terry A Hunt—Student, Clemson College, Clemson, SC. Sponsor: J Lindsay.

Georgia Institute of Technology

Douglas R Amos—Student, Georgia Inst of Technology, Atlanta, Ga. Sponsor: J L Taylor.

Joel L Hutcheson—Student, Georgia Inst of Technology, Atlanta, Ga. Sponsor: J L Taylor.

Henry H Robinson—Student, Georgia Inst of Technology, Atlanta, Ga. Sponsor: J L Taylor.

Lowell Technological Institute

Ahmad Sami A S Shawali—Student, Lowell Tech Inst, Lowell, Mass. Sponsor: G R Griffin.

New Bedford Institute of Technology

Robert C Surprenant—Student, New Bedford Inst of Technology, New Bedford, Mass. Sponsor: F Tripp.

NOT AFFILIATED WITH A SECTION

Senior

Orhan S Dilgimen—Asst colorist, Mensucat Santral TAS, Demirhane Cad, Kazlicesme, Istanbul, Turkey. Sponsors: I Yucetar.

Fred Dolder—Chief chemist, Dolder & Co, Basel, Switzerland. Sponsors: G P Paine, G J Mandikos.

Herbert G Scharf—Sole owner, Chemisch Technische Zentrale, Wiesbaden, Germany. Sponsors: G Neisser, L Fusser.

Elected to Membership

March 20, 1961

No designation after names indicates Senior
(A) indicates Associate
(J) indicates Junior
(S) indicates Student
* indicates transfer from another class of membership

CENTRAL ATLANTIC REGION

Metropolitan Section

Richard T Julio
Harlod G Latham
Muneaki Sekiya
Kenneth A Reinhard (A)

SOUTHERN REGION

Northern Piedmont Section

Carmen A Cornetto
Neville P Lewis
*Aubrey R Hoover**

Palmetto Section

William O Wissner Jr

WESTERN REGION

Mid-West Section

Charles T De Coursey (A)

STUDENT CHAPTER

New Bedford Institute of Technology

Kanubhai S Desai (S)

Activities of the Local Sections

Hudson-Mohawk

APPROXIMATELY 50 members and guests attended the March 10th technical meeting of the Hudson-Mohawk Section at Chelsea House, Tribes Hill, NY, which featured a panel discussion on "wash-and-wear" fabrics.

Each of the following three speakers spoke on the activities that his respective company is engaged in with respect to the "wash-and-wear" field: Sidney M Edelstein, president and technical director, Dexter Chemical Corp; Harold Bellinson, manager, Standard Testing Laboratory, Cluett, Peabody, Inc; and P J Fynn, director Research Laboratory, J C Penney Co, Inc.

A question-and-answer period followed the panel discussion.

The Section's next scheduled meeting is set for April 14, at which time a tour will be made of the General Electric Co's Silicone Division at Waterford, NY.

•

Palmetto

PALMETTO Section will hold its Spring Meeting April 14-15 at the Richmond Hotel, Augusta, Ga.

A Research Committee has been slated for 7:30 pm, April 14 in the Riviere Room.

The general research meeting will be held the next morning at 10 am in the Georgian Room, followed by an Officers Luncheon at 12 noon in the Riviere Room.

The afternoon technical session, slated for 1:30 pm in the Georgian Room, will feature talks by H T Buckley, Emery Industries, and H R Davidson, Davidson & Hemmendinger. Mr Buckley will discuss the use of finishes and lubricants for natural and synthetic fibers, as well as new methods of laboratory evaluations. Dr Davidson will describe the Colorant Mixture Computer, an electronic device for matching shades and production color control.

Following a social hour in the Augusta Room, beginning at 6:00, the banquet will be held in the Georgian Room with L C Harris, editor, *Augusta Chronicle* serving as guest speaker.

M Kathryn Wharton and Jack C Smith, National Bureau of Standards, guest speakers at Washington Section meeting of February 10

L to r: Jack C Smith, National Bureau of Standards; M Kathryn Wharton, National Bureau of Standards; Louis R Mizell, Washington Section chairman

Washington

TWO technical papers were presented at the February 10th meeting of the Washington Section held at the National Institute of Drycleaning, Silver Spring, Md.

Jack C Smith, National Bureau of Standards, spoke on the "Impact Properties of Textile Fibers". He outlined the factors that are involved in designing textile materials that must have superior impact properties. He showed that the slope of the stress-strain curve frequently correlates with the ability of the material to resist impact. The calculated specific breaking energy is used to predict the actual performance of a given material. Dr Smith illustrated his talk with colored movies of actual laboratory tests. These included demonstrations with both the longitudinal and transverse impact test apparatus. Many fibers were found that were superior to metals in adsorbing impact, and equal to metals in resisting impact.

M Kathryn Wharton, National Bureau of Standards, discussed the "Identification of Fiber Blends by Infrared Spectroscopy". Miss Wharton described how the fibers were first separated by using density gradient columns of selected liquids. The infrared spectrum of the unknown fibers were identified by comparison with known spectrum classification charts. Fibers which have similar spectra can be differentiated by solubility tests or microscopic observations. An advantage of this method of analysis is that dyes and finishes do not have to be removed, as they do not interfere if present in small quantities. Miss Wharton also pointed out that different types of a given fiber can frequently be identified by this procedure, and that some chemical modifications of fibers can be distinquished by an examination of their infrared spectra.

Prior to the technical session, Chairman Louis R Mizell called upon the chairmen of the standing committees to give a report of their programs for the coming year. He also introduced many staff members of the National Bureau of Standards who were guests of the section.

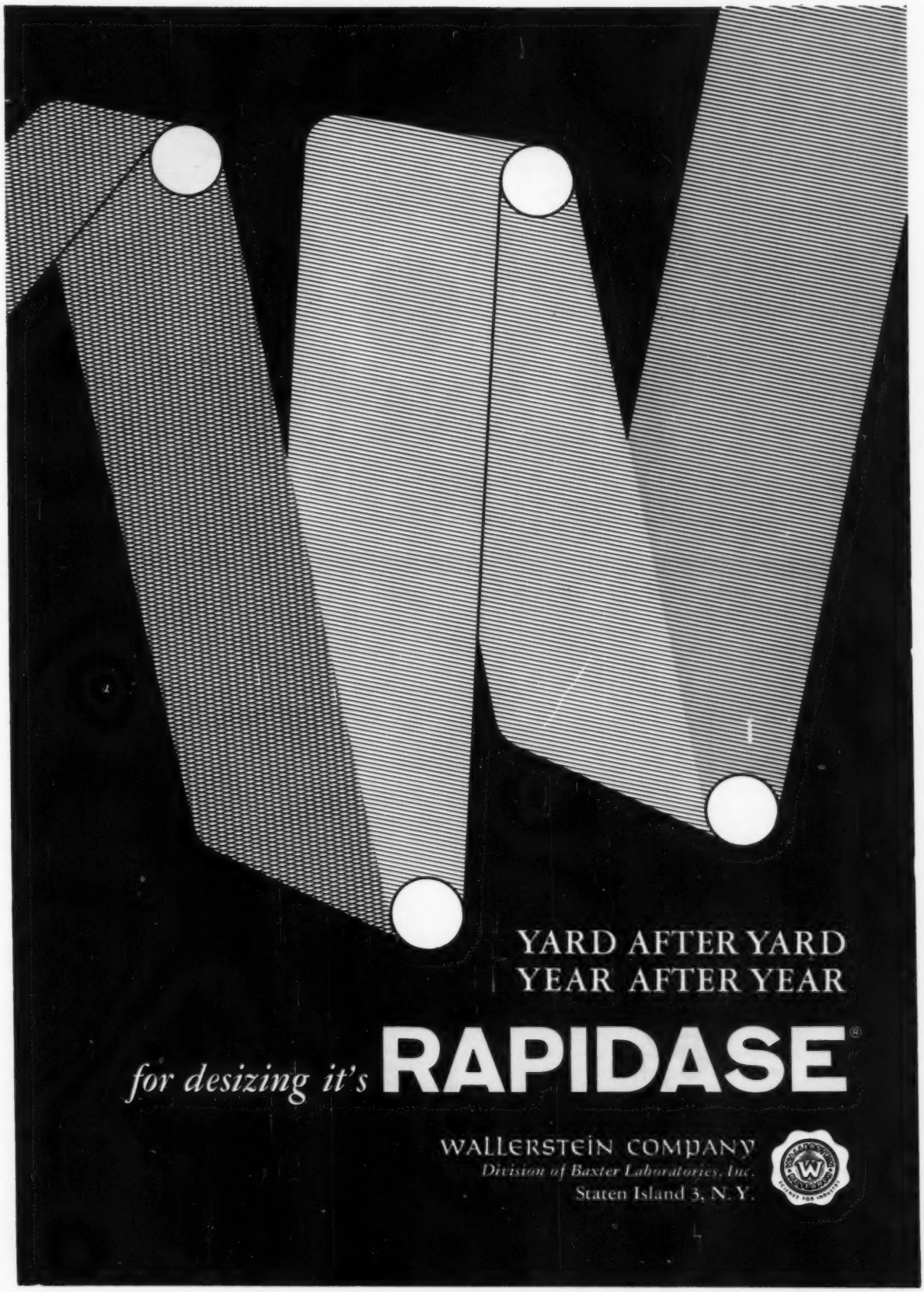
•

Southeastern

IDA CASON CALLAWAY GARDENS at Pine Mountain, Ga, was the scene for the quarterly meeting of the Southeastern Section held February 11. Approximately 175 members, wives, and guests attended this meeting, for which Sectional Committeeman James S Cox, Auburn Univ, arranged an excellent program.

The "round-table" meeting was attended by more than 75 members, with Harold Brinkley, Russell Mfg Co, Alexander City, Ala, leading a discussion on vat dyeing. The round-table discussions continue to gain in popularity.

During the afternoon session, those in attendance were treated to an unusual program. Gennady Kosolapoff, associate professor of chemistry at Auburn Univ, discussed "The Position of Professional Scientists in the USSR". Dr Kosolapoff is a native of Russia and has visited that country many times since his departure many years ago.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AW (powder)		+	1% in H_2SO_4	5	130°F*	Fast	Good
CB-32 (liquid)	+		15%	1	70-130°F	Moderate	Excellent
FFG (powder)		+	1%	5	130°F*	Fast	Good
GS-33 (liquid)	+		15%	3	70-130°F	Moderate to Fast	Very Good
HS-31 (liquid)	+		15%	4	70-130°F	Moderate	Excellent
HS-71 (powder)	+		15%	4	70-130°F	Moderate	Excellent
MS-31 (liquid)	+		10%	2	70-130°F	Fast	Good
MS-72 (powder)	+		10%	2	70-130°F	Fast	Good

*Acrylics require a dyeing temperature of 180-200°F.

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PRINTING OF POLYESTER FABRICS——— Phosphoric Acid Esters of Polyglycols Added (D,2/07)

U S Pat 2,901,311 (Farbwerke Hoechst—Nuesslein et al—Aug 25, 1959)

While carrier dyeing of polyester fabrics with disperse dyes in aqueous media has become common practice, application of the same specific working conditions to the printing of these fabrics does not give satisfactory results. This is due to the different physical structure of the printing paste, the fixing phase, and so on, in contrast with the easily controllable conditions of the dyeing process.

According to the current method, good results in printing disperse dyes on polyester (polyethylene terephthalate) fabrics are obtained by applying pastes which contain one or several polyhydric alcohols or derivatives thereof, drying, and exposing to elevated temperatures. This process may also be used in the printing of acetate fabrics.

Bi- or trihydric alcohols, such as glycols, glycerol, butane diol, or hexane triol, or ether-type derivatives, such as glycol ethers or polyethoxylated products, may be employed in this process. Insofar as ethers of the above type contain free OH-groups, they may be further esterified with sulfuric or phosphoric acids in order to increase solubility (col 2, lines 40 & ff); here tertiary o-phosphates of the polyglycolester (of approx 200 mol wt) proved superior to the non-esterified polyglycol (col 3, line 45).

The compounds are incorporated in the printing paste; the printed fabrics are then dried below 100°C and fixed at 140-200°C (preferably for three minutes at 140-160°C or for 30 seconds at 180-200°C)

Example: Into a paste of 1-NH_2-2-methoxy-4-hydroxy anthraquinone, stirred with thiodiglycol and water and mixed with a tragacanth-crystal gum-thickener, the phosphoric acid ester of a dodecyl alcohol-ethylene oxide condensate was introduced. An all-Dacron fabric was printed with this paste, dried and baked for 30 seconds at 200°C, rinsed and soaped. The print obtained from this paste reportedly showed greater intensity of color than did a control sample wherein the phosphate ester had been omitted.

References cited by the Patent Office:

Am Dyestuff Reptr of Jan 5, 1953 (Gibson et al—Du Pont) describes the Thermosol process and its application on Dacron; the procedure calls for padding, dyeing in a flue-drier, and passing at temperatures above 350°F through the Thermosol unit. Preferable padding assistants are blends of CMC (3-4%) and Cellosolve (20%).

U S Pat 2,663,612 (Du Pont/1953) protects the continuous pad-dyeing process as described in the former reference. Example #3 refers especially to naphthol dyeings obtained by padding on the naphthol component in the presence of a solution of Cellosolve. [Cf *Am Dyestuff Reptr* 44, 232 (1955)].

Brit Pat 701,968 (ICI/1954): dyeing dispersions or solutions are fixed on polyethylene terephthalate fibers by passing the padded or printed goods through steam under superatmospheric pressure.

•

STRIPPING ASSISTANT——— Quaternary Ammonium Compounds Combined with Water-soluble Polymeric Acids (C, 1)

U S Pat 2,902,453 (Rohm & Haas—Matlin—Sept 1, 1959)

The stripping of vat or other dyeings reportedly is greatly enhanced by adding, as an assistant, a "scavenger system", which consists of a) a quaternary ammonium compound that contains at least one higher hydrophobic chain (C = 8 or more), and b) a water-soluble polymeric acid.

The quaternary ammonium compound and the water-soluble polymeric acid are assumed to form a complex colloid salt type, termed a "coacervate", consisting of clusters of micelles, which are formed by the interaction of oppositely charged components.

Examples of such quaternary ammonium compounds are cetyl dimethyl ethyl ammonium chloride, laurylpyridinium chloride, and many others (col 2, lines 25-47). The polymeric acids may be polymers of acrylic, methacrylic acid or copolymers thereof with a molecular weight of at least 1500 and preferably 7500. Essentially these compounds are water soluble to an extent of at least 0.1% (col 2, lines 46-68).

The stripping bath contains the stripping agent proper, ie, reducing substances such as zinc hydrosulfite, formaldehyde sulfoxylate, formamidine sulfinic acid, etc, in an amount of two to five percent owf (0.01-1.0% on weight of the bath) plus the "scavenger system" ("a" plus "b") in an amount of 0.5-4.0% (preferably 2%) owf or 0.05% on weight of bath. The pH may be between 3-13 according to the best efficiency of the reducing portion of the composition.

Example: Cotton vat dyed with 4% CI Vat Blue 14 (CI 69810) was submitted to comparative stripping tests, wherein 5% sodium hydrosulfite plus 10% NaOH owf was used as a reducing agent and combined with the following additives:

1) polyvinylpyrrholidone;
2) methyldodecyl benzyl trimethyl ammonium chloride, and
3) methyldodecyl benzyl trimethyl ammonium chloride plus polyacrylic acid of molecular weight 10-20.000.

Additive "1" gave a light blue, "2" a dirty blue gray, and "3" a very faint yellow shade after stripping at 85°C at a pH of 12-13.

Among the references cited by the Patent Office:

U S Pats 2,548,892; 2,548,914 and 2,549,079 (Best Foods Inc/1951): a solid dry color- and stain-remover consists of zinc formaldehyde sulfoxylate and a high substituted quaternary ammonium chloride plus a solid lower organic acid such as citric, tartaric, succinic, oxalic, etc.

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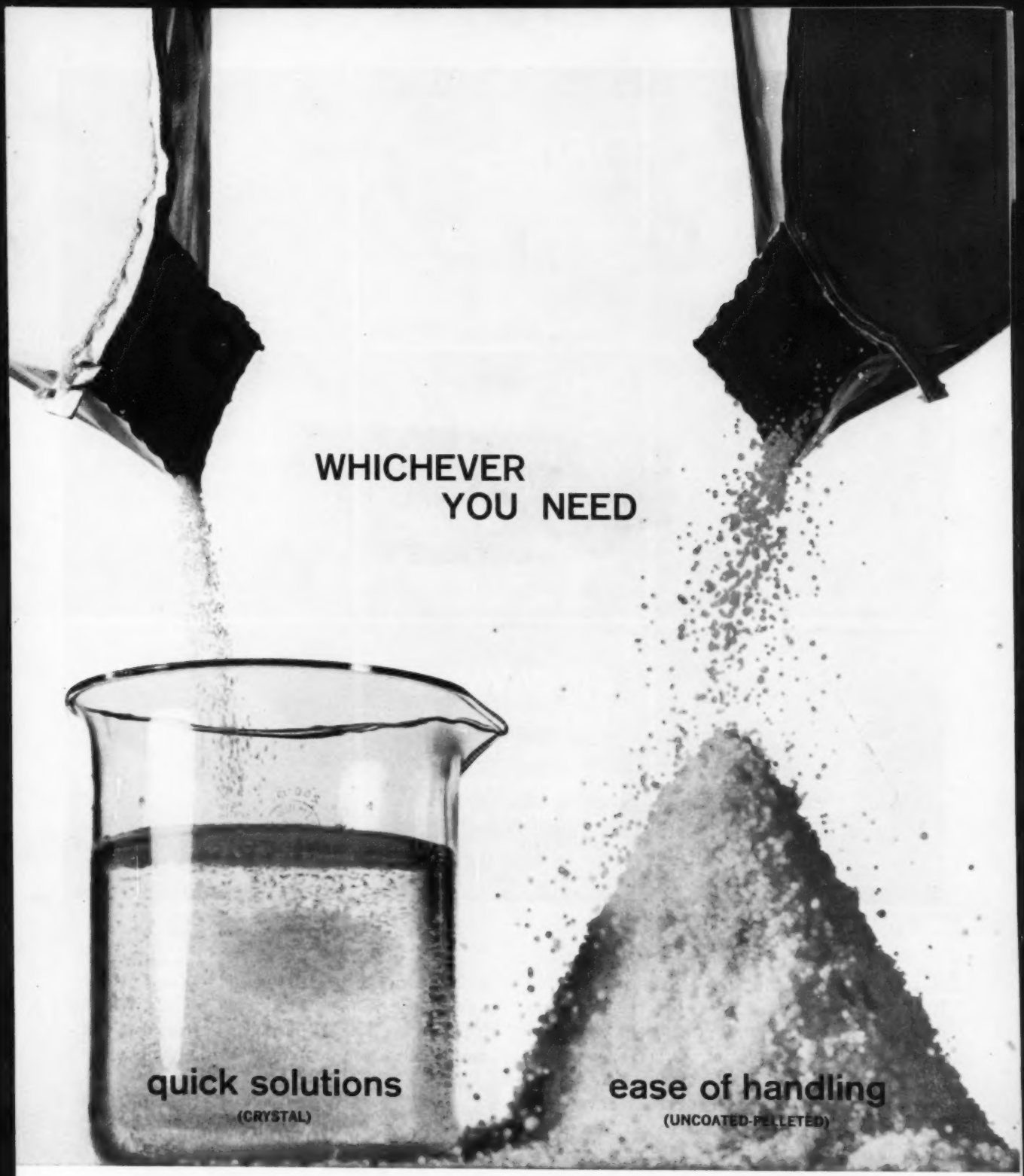

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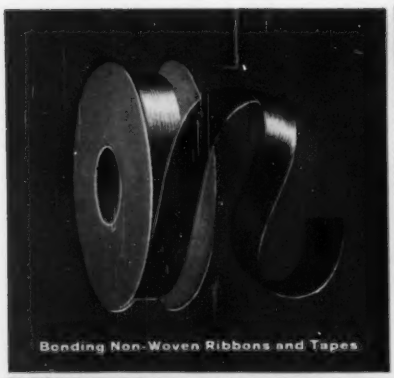

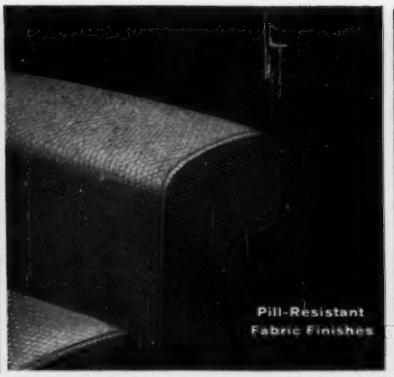

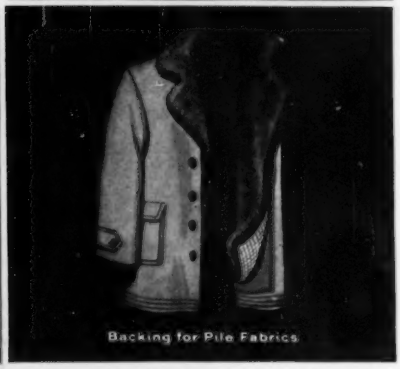

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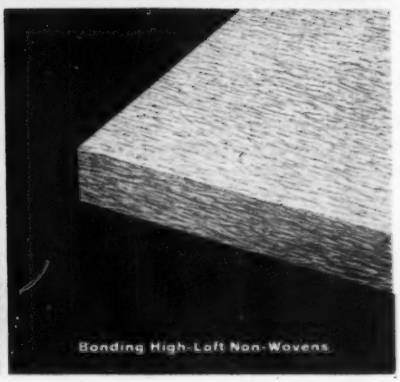

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ADR News Report:

General News of the Industry
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Introducing an "Open Forum"

AN additional editorial feature is brought to its readers by the publishers of the AMERICAN DYESTUFF REPORTER, on page 9 of this issue under the heading "Open Forum".

We also draw the attention of our readers to the fact that the contents page will hereafter appear on page 7 to make it easier to locate the listings of editorial material.

Program for Gordon Research Conference on Textiles

The 1961 Gordon Reesarch Conference on Textiles will be held July 1-14 at Colby Junior College, New London, NH, with H J White serving as chairman and T F Cooke as vice chairman.

Topics to be covered during the five-day program are as follows:

July 10—"Effects of Fiber Structure on Dyeability with Disperse Dyes"— B Sheldon Sprague and R W Singleton; "Applications of Modern Thermoanalytical Techniques to Studies of Reactions at Elevated Temperatures in Fibers, Fiber-forming Polymers and Elastomers"—Robert F Schwenker Jr and Louis R Beck Jr

July 11—"Ideas and Investigations on the Supermolecular Structure of Fibrous Materials"—O Kratky; "Order and Mobility of Molecules in Fibers"—W O Stratton

July 12—"Problems of Heat Setting of Nylon in High-speed False-twist Crimping Processes"—D F Arthur and C R Jones; "Isotactic Polypropylene Fibers"—Vittorio E Cappuccio

July 13—"Chemical Bonding and Reaction Rates of Wrinkle-resistant Finishes with Cotton"—S J O'Brien and W J Van Loo Jr; "Microsopically Observed Phenomena of Fiber Damage in Cotton"—Mary L Rollins

July 14—"Wool Stabilization through Interfacial Polymerization"—Robert E Whitefield, Lowell A Miller, William L Wasley, and Willie Fong.

Attendance at the Conference is by application and is limited to 100 conferees. Applications must be submitted by May 1 in duplicate on standard application forms which may be obtained by writing to the office of director. A fixed fee of $100 covers registration, room and meals.

For applications or additional information, write to W George Parks, director, Dept of Chemistry, Univ of Rhode Island, Kingston, RI.

•

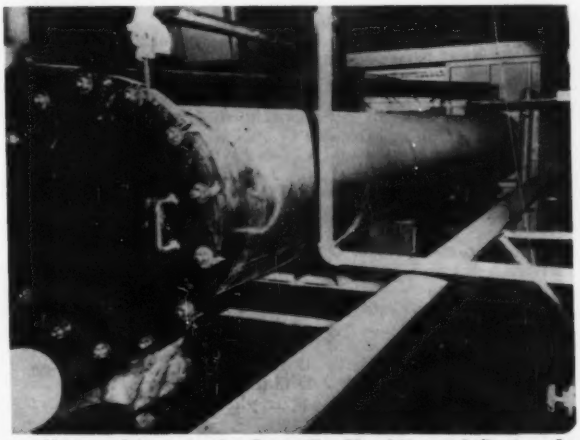
Waste Heat Reclaimer Cuts Operating Costs at Pottsville Bleaching & Dyeing

A waste heat reclaimer plays an important part in bleaching and dyeing 55,000 lbs of fabric a day at Pottsville Bleaching and Dyeing Co, Port Carbon, Pa.

Designed to recover heat from waste water, the heat reclaimer—manufactured by The Patterson-Kelley Co, Inc, East Stroudsburg, Pa—is a closed-pressure type, constructed of Type 316 stainless steel on the waste water side and coated carbon steel on the fresh water side. Heating surface consists of Type 316 stainless-steel tubing. The unit measures 33" OD flange diameter × 27" shell diameter ×23'0" long. ASME construction is for 165# psi.

Fresh water flows from city mains under pressure through a series of water softeners to the waste water heat reclaimer. The inlet temperature to the multi-pass shell reportedly is raised from 45°F to 95°F, adding 6,750,000 BTU's/hr of heat to 270 gpm of water.

Approximately 270 gpm of waste water, at an average temperature of 120°F, is pumped through the multi-pass



Heat reclaimer at the Pottsville Bleaching and Dyeing Co recovers heat from waste water for use in preheating fresh water to be used in process operations

tube sections, transferring its heat to the fresh water.

Reheated fresh water feeds a 3000-gallon hot-water storage heater under city pressure where temperature is elevated to 160°. Dyebecks and bleaching equipment are supplied direct from the storage heater for hot operation or blended with water from reclaimer for lower temperature operations.

Pottsville Bleaching and Dyeing Co, founded in 1909, bleaches and dyes cotton tubular knitted products. Equipment consists of 12 dye becks ranging from sample machine to 1200-lb machines, hydrogen peroxide bleaching kiers of 14,000 lbs capacity and continuous hydrogen peroxide bleaching ranges of 24,000 lbs.

•

MIT Offering Summer Programs in Engineering Principles of Textile Materials

To survey progress in the utilization of engineering science in the systematic design of improved textile fabrics and structures, the Massachusetts Institute of Technology will offer during the 1961 Summer Session two special summer programs: Elements of Textile Structural Mechanics (Monday, June 19 through Friday June 23) and Advance Mechanics or Textile Structures (Monday, June 23 through Friday, June 30).

The first weeks program will summarize the elements of textile structural mechanics for the benefit of those new to the engineering concepts of fibrous materials. The second week's advanced program is planned for those who have worked in depth in specific areas of textile product development and who now wish to consider the more general field appearing out of recent research.

Both programs will be presented by the faculty of the Textile Division at MIT including Edward R Schwarz, Henry M Morgan, Wajuro Itani and Stanley Backer, who will direct the programs. Special sections of the course will be given by other recognized contributors to this special field including Joel Lindberg of the Swedish Textile Research Institute and North Carolina State Textile College; W Denney Freeston of the Textile Research Institute and Fabric Research Laboratories; W J Schaffers and R H Brand of E I duPont de Nemours & Co, Inc; Milton R Platt, W G Klein M Coplan, and G A M Butterworth of Fabric Research Laboratories; D R Petterson of Chicopee Mfg Co; S Scheier of the Textile Research Institute, and Fred K Mesek of Johnson and Johnson.

Further information concerning the detailed content of two programs, housing accommodations, tuition and applications may be obtained by writing to Professor James M Austin, director of the Summer Session, Room 7-101, Massachusetts Institute of Technology, Cambridge 39, Mass.

Cotton Utilization Research Conference Scheduled for May 1 in New Orleans

Recent advances in cotton utilization research will be the subject of a three-day conference between industry and members of the Southern Utilization Research and Developmenut Division research staff, beginning May 1 in New Orleans.

Earl Heard, vice president, research, West Point Mfg Co, has accepted an invitation to serve as general chairman for the meeting. Chairmen for various sessions will be George S Buck Jr, technical assistant to the executive vice president, National Cotton Council of America; Lawrence L Heffner, Cotton Utilization Specialist, North Carolina State College School of Textiles; Louis L Jones Jr, president, Canton Cotton Mills; and C Norris Rabold, director of research, Erwin Mills.

The first day's program will be devoted to reports on research on fiber properties and mechanical processing of cotton.

Tuesday morning J David Reid, head of the Southern Division Wash-Wear Task Group, will lead off the "wash-wear" discussions with a paper on "Some Recent Advances in 'Wash-Wear' Research." W A Reeves, chief of the Cotton Finishes Laboratory, will report on "Effects of the Nature of the Crosslinking Agent upon Cotton Fabric Properties," and C M Welch will discuss divinyl sulfone adducts as "wash-wear" finishes. J D Guthrie is to report on "wash-wear cottons through the vapor phase reaction with formaldehyde.

C M Conrad, chief research chemist of the Plant Fibers Pioneering Research Laboratory, will close the Tuesday morning session with a discussion of thermoplastic cottons.

Other types of chemical treatments for cotton will be taken up Tuesday afternoon, with G L Drake Jr, speaking on flame-resistant cottons, and R J Brysson discussing weather- and rot-resistant cotton products. K M Decossas will report on costs of the new chemically modified cottons, and H L E Vix on fabric evaluations. A representative of the Western Utilization Research and Development Division, Albany, Calif, is expected to report on wool research findings there.

After the close of the formal program, the remainder of Tuesday afternoon will be given over to a tour of the cotton laboratories and inspection of some of the research products.

The third day of the conference is reserved for conferences of the individual advisers with laboratory chiefs and research scientists, and with the Division director.

●

Du Pont Starts Up New Methylamines Plant

The Du Pont Company on March 16 announced the start-up of a new plant at its Belle, W Va, site to make methylamines and their derivatives.

As a result of economies expected from large-scale production, the company also announced a reduction of more than 30 percent in the price of dimethylacetamide (DMAC), a methylamine derivative previously in limited supply. The new bulk price for DMAC is 50 cents a pound, down 22.5 cents from the previous price.

In addtion to DMAC, the Belle plant will produce dimethylamine (DMA); dimethylformamide (DMF), used principally in the manufacture of Orlon acrylic fiber; and monomethylamine (MMA).

The new plant more than doubles Du Pont's production capacity for methylamines, previously made only at the company's Houston, Tex, plant, and reportedly offers reduced freight costs and faster service to customers in the East and Midwest. Houston will continue to make DMA, MMA, trimethylamine (TMA), and diethylamine (DEA).

The price trend for methylamines has been steadily downward. Current price of DMA is 28 cents a pound, compared with 85 cents in 1945.

●

Fiber Society to Meet at U of Ga

The spring meeting of the Fiber Society will be held April 26-28 at the University of Georgia, Center for Continuing Education, at Athens, Ga. The Governing Council of the Society will meet Wednesday, April 26, for a one-day session prior to the two-day general meetings.

Fiber Society membership consists of persons engaged in research and the scientific study of production, properties, processing and use of fibers, fiber products and fibrous materials. It represents chemists, physicists, biologists, engineers and technologists. Some 150 are expected to attend the meeting.

The Society's fall meeting is scheduled for Oct 11-13 at West Point, NY.

Stanley Backer, associate professor of mechanical engineering, Massachusetts Institute of Technology, is president of the society. Secretary is Julian Jacobs (The Fiber Society Inc, Box 405, Athens, Ga).

45th Knitting Arts Exhibition—

The April 17th issue of *American Dyestuff Reporter* will feature material devoted to the 45th Knitting Arts Exhibition, which will be held April 24-28 at the Atlantic City, NJ, Convention Hall.

Descriptions of exhibits of chief interest to our readers, show hours and other pertinent information will be included along with regular articles geared to the knit goods trade.

Persons planning to attend the KAE can secure room reservation forms by writing to the Housing Bureau, 16 Central Pier, Atlantic City, NJ.

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There are good reasons why so many azo dye users prefer oxidizing with Solvay® Sodium Nitrite. It's much easier to handle than other common oxidizing agents. In addition, it is an excellent and convenient source of required nitrous acid. All Solvay Sodium Nitrite is anhydrous USP at no price premium. Available in flake or granular form. For details of packages and prices, contact your local Solvay representative.

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For rayon-acetate and synthetic blends. Outstanding compatibility, versatility and stability in a variety of finishing mixes. Does not affect light fastness. Used with resins, silicones and dyesetters of all types.

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A liquid softener for use in all phases of tricot dyeing and finishing. Highly substantive to nylon and can be applied on whites treated with many optical bleaches. Eliminates scumming and finishing difficulties.

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Similar properties to Velvapex 214-250 but with additional built in resistance to needle cutting.

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A white cationic paste softener imparting a smooth silky hand. Does not retain chlorine like most cationics.

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A white liquid polyethylene softener especially recommended for cottons. Imparts a soft, cashmere hand. Compatibility of a nonionic yet exhausts on to the fibre. Excellent for use with all types of resins. In package dyeing does not filter out and gives uniform, even results throughout the package. Eliminates needle cutting on knit goods. Does not cream, separate or curd on standing.

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Ecco Ribbon Finish; Ecco Weighter OVD

Eastern Color & Chemical Co, 35 Livingston, St, Providence 4, RI, has introduced two new products: Ecco Ribbon Finish and Ecco Weighter OVD.

Ecco Ribbon Finish is described as "a highly condensed thermoplastic resin which gives a stiff, wiry finish to synthetic fabrics." The excellent binding properties of Ecco Ribbon Finish is particularly valuable in preventing edge raveling, it is claimed. The highly condensed thermoplastic resin of this film-forming product reportedly deposits a clear, light-colored film which does not effect the gloss or luster of fabrics.

Ecco Ribbon Finish is said to contain no oxidizable material, thereby affording little danger of discoloration in storage. Eastern Color & Chemical Co states that the product is stable in normal storage conditions in closed containers for six to nine months.

This new finish reportedly produces an unusually durable organdy finish, which possesses sought-after rustle qualities when it is used on print fabrics, such as acetate taffeta, nylon sheer or 5 or 10 Momme silk.

Ecco Weighter OVD is said to impart fullness of body and weight to cotton and synthetic fabrics with a minimum effect on shades of colored fabrics and with a moderate amount of stiffening. It is said to be a water-soluble, granular solid which is completely compatible with softeners, finishing oils and most other auxiliaries. It reportedly may be used in combinations to give a variety of finished hand.

In application, Ecco Weighter OVD is said to be dissolved by agitating in water previously warmed to 55-60°C. Application is then made by padding or in a quetsch at approximately 130°F (55°C) with other finishing agents. Normal drying conditions reportedly are sufficient.

Complete data including recommendations for applications are available from Eastern Color & Chemical Co.

●

Tint-Out Process

Speedry Chemical Products, Inc, early last month announced the development of a new chemical formula for the washable tinting of synthetic and natural yarns. The new process was developed from research in collaboration with Chemtel Corp, which will market it exclusively under the brand name of "Tint-Out".

The Tint-Out process, it is claimed, makes possible application to yarn of tints that are completely soluble in water. Tint-Out, which is said to be already perfected in many major colors and shades, may also be made available for grade indentification of natural fibers.

The Tint-Out method is said to have proven to be 100% effective in Dacron and cotton applications in tests conducted with several major yarn manufacturers through fabric finishing operations. All tints reportedly have been tested by heat-setting at high temperatures, by exposure to different sizes and to immersion in various chemical solutions found in mill and dyehouse procedures. The tints were completely removable in the normal scouring operations or in hot or cold water, it is claimed, and no adverse effects were noted on the finished fabric. Further experiments and evaluations with other fibers are underway, and results are expected to be announced shortly.

Speedry Chemical Products, Inc has been identified as the manufacturer of marking inks and devices known as the Speedry Brushpens and Magic Markers. It is a leader in the field of specialized marking, stamping and stencilling inks and applicators, marketing more than 1,250 special formula industrial inks.

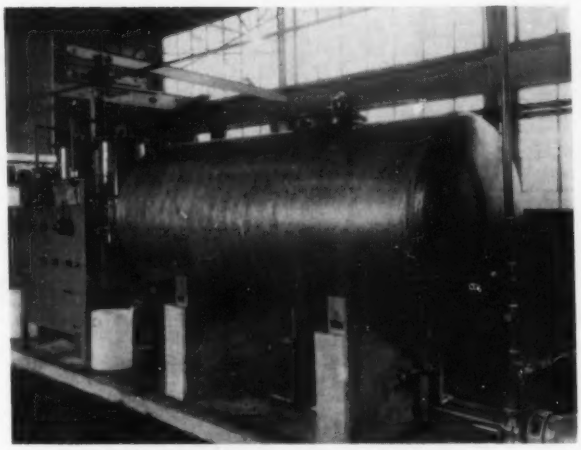
Chemtel Corporation will handle the exclusive world-wide distribution of the Tint-Out products.

For further information, write to Milton Rubin Associates, 1270 Sixth Ave, New York 20, NY.

●

Horizontal 1000-gallon Polyester Processing Tank

The availability in stock of a horizontal 1,000-gallon processing tank fabricated from a specialty glass-reinforced polyester has been announced by Justin Enterprises, Inc, Cincinnati, O, which is recommending it as a processing unit for the textile, chemical and other industries where corrosive conditions necessitate a structure with high chemical resistance. Because these tanks are being produced in quantity as stock items, the price is said to be significantly lower than comparable custom-made units. Other capacities, ranging from 50 to 10,000 gallons, are available.



1,000-gallon glass-reinforced polyester tank

High resistance to corrosion reportedly has been achieved by utilizing a specialty bisphenol-A polyester resin reinforced with glass fibers. Recently reported tests, copies of which are available from Justin Enterprises on request, reportedly have shown that the bisphenol-A polyester is more resistant to prolonged contact with most acids, alkalis, and bleaches at elevated temperatures than general-purpose or other polyesters. Chemical resistance of the specialty resin (Atlac 382, manufactured by Atlas Powder Co, Wilmington, Del) is said to be provided by its patented chemical composition based on bisphenol-A.

A high strength-to-weight ratio, durability, and excellent impact resistance are claimed to be achieved by a Justin fabricating technique that produces a high glass content. Corrosion resistance reportedly is provided by the first fabrication step, where a chemical-resistant coat of bisphenol-A polyester forms the inner surface of the tank.

The tank, 10' long, 50" in diameter, and with a wall section of ¼", weighs approximately 300 lbs. Translucence, a feature of the tank, allows observation of the liquid level within the tank and elimination of liquid level gages.

Complete with manhole, stainless-steel fittings, and mounting saddles, the tank is priced at approximately $1,000. Additional information can be obtained by writing Justin Enterprises, Inc, 3755 Edwards Rd, Cincinnati 9, O.

●

New Fast Color Bases

Rohner Ltd, Pratteln, Switzerland, now has available for the first time three new fast color bases which heretofore have only been offered as diazo fast color salts. These diazotizable bases are: Orange RD, Bordeaux BDC, and Black K.

The Bordeaux BDC and Orange RD bases reportedly are bright, economical, and have excellent fastness-to-light properties in coupling with various naphthanilides. The Black K base is recommended by Rohner Ltd for a navy and for bluish blacks which, it is claimed, also have good lightfastness ratings.

These products reportedly are suitable for yarn dyeing and piece dyeing of cottons and rayons and also have a potential use for synthetics. The Orange RD base and Bordeaux BC base have suggested use for printing on cottons and rayons.

The products are said to have excellent ratings for chlorine, mercerizing and hot pressing.

Literature and samples are available upon request from Crescent Chemical Co, Inc, 77-44 164 St, Flushing 65, NY.

PERSONALITIES IN THE NEWS

Kennedy

Brooks

KixMiller

Anderson

Lawson

Celanese last month announced a realignment of major executive functions, including the appointment of *James R Kennedy* as a new executive vice president.

Under the new alignment, broad responsibilities for conduct of Celanese business are assigned to the three corporate executive vice presidents, as follows:

Mr Kennedy, executive vice president—finance and administration, is charged with direction over corporate financial planning and administration; maintenance of relationships with stockholders and the financial community; industrial relations, and public relations;

John W Brooks, executive vice president—domestic operations, has responsibility for guiding the development and administration of the Corporation's four domestic companies, Celanese Fibers Co, Celanese Chemical Co, Celanese Polymer Co and Celanese Plastics Co;

Richard W KixMiller, executive vice president—international operations, is responsible for the management of Celanese interests in operations and activities outside of the United States, including all foreign affiliates and subsidiaries; activities relative to foreign mergers, acquisitions and developments; licensing and technical service contracts, and export sales.

Both Mr Brooks and Mr KixMiller have been executive vice presidents of the Corporation for the past year. Both previously had been concerned with direction of various Celanese domestic operations. Mr Kennedy for the past year had served as vice president—financial.

●

John J Sokolinski, a charter member of AATCC, has retired after 40 years service with the Arabol Mfg Co, Brooklyn, NY, manufacturers of industrial adhesives.

Prior to his career with Arabol, Mr Sokolinski was superintendent of the bleachery of the Clark Thread Co at its Newark, NJ, mill. He was originally employed as a chemist at Arabol's Brooklyn plant, following which he was promoted to chief chemist. Based on his experience in textile chemistry, he was later put in charge of the Textile Division and travelled extensively in Mexico, Cuba, and the South. He served in this position for 10 years until 1943, when he was appointed general manager of the Brooklyn factory. He was promoted to vice president in charge of the Brooklyn Division in 1945, in which capacity he has served until the present time.

Mr Sokolinski is a graduate of Pratt Institute, and also attended the Polytechnic Institute of Brooklyn, where he studied organic chemistry, coal tar dyes, etc.

●

The Southern Textile Overseers Association Scholarship in the School of Textiles at North Carolina State College has been awarded to *John Alex Bynum Jr,* of Wadesboro, NC.

Arrangements to establish the $250 scholarship at State College were made by *Lyman E Frost,* STOA president.

●

Hartford Fibres Co has announced the appointment of *W C Privette* as dyeing and finishing service manager for Zantrel Polynosic rayon fiber. He is responsible for technical service in the area of wet processing, dyeing and finishing of Zantrel and Zantrel-blend fabrics, covering woven, knitted, industrial and nonwoven types.

Mr Privette was formerly plant superintendent of American & Efird Mills, Finishing Division, Mount Holly, NC. His headquarters are in the Charlotte, NC, office of Hartford Fibres Co.

Penick & Ford, Ltd has announced the promotion of *G M Anderson* to the position of assistant sales manager of the Corn Refining Division, with headquarters in Atlanta. *J R Heard* succeeds Mr Anderson as manager of the Textile Division of Technical Sales Service and Field Development, also with headquarters in Atlanta.

The scope of Mr Anderson's new assignment covers sales and service activities in the textile, food and paper industries. He has been with Penick & Ford since 1939.

Mr Heard, whose industrial experience includes the manufacture of textile equipment, production of synthetic fibers and textile mill operations, joined P & F's Technical Sales Service Division in 1956.

●

Promotion of *J Keith Lawson Jr,* to the position of scientist in the newly created Research Scientist Program within Chemstrand Research Center, Inc has been announced.

Dr Lawson, first person to be selected in this new program, is an organic chemist and has been serving as group leader of the Acrilan Finish Group. In his new position as scientist, he will be engaged in polymer and synthesis research, and will report to *C J Stehman,* director of the Exploratary Research Department. He has been with Chemstrand since 1951.

●

Three new appointments in the research department of Solvay Process Div, Allied Chemical Corp, have been announced. *Elwood F Booth Jr* becomes assistant director of research; *Edward R Degginger,* research supervisor; and *Michael J Skrypa,* associate research supervisor.

Joining Solvay in 1951, Dr Booth has been assistant chief engineer and assistant manager of the Syracuse, NY, Plant.

Dr Degginger has been with Solvay's research department since 1952.

Dr Skrypa has been associated with Solvay Process since 1953 as a senior research chemist.

●

The 25-Year Club of the Chemical Group, General Aniline & Film Corp, New York, held its annual meeting February 24 at the Savoy Hilton Hotel.

The Club has a current membership of 142 men and women, active as well as retired, who have worked for the company for 25 years or more.

The meeting this year consisted of a reception, dinner, annual business meeting, induction of 13 new members and an address by *Philip M Dinkins,* president, General Aniline & Film Corp, and by *Harold G Shelton,* vice president, The Chemical Group.

F Vagts of the Chicago Lboratory presided at this meeting and was succeeded as president by *L McGurn* of the Export Department, New York.

●

E F Drew & Co, Inc has announced the appointment of *George G Armada* as sales promotion manager of the Company's Textile Chemical Deprtment.

Mr Armada will direct the advertising and sales promotional campaigns for the Company's permanent mothproofing product, Drewclad.

Mr Aramada, a member of Drew's Textile Chemical Department for the past 10 years, has been closely associated with the promotion and sale of Drew's line of chemicals and processes for the textile industry. He has also been connected with all phases of the design and development of new Drew products and processes which will be released during the coming year.

Abstracts———

(*concluded from page 24*)

The essential problem which these fabrics, both synthetic and cotton, have in common is their tendency to pucker along the seam. "Wash-and-wear" fabrics are closely woven to begin with. Through the addition of a synthetic resin finish to the material, the weave is made still denser. When these materials are then sewn, the action of the needle, which presses the fabric yarns closely together (to make room for the stitch knot) causes distortion which finally produces strains in the fabric.

A seam running parallel to the warp will usually tend to pucker, since all the stitch knots press against closely set crosswise yarns in the same line. A seam without puckering can be achieved by sewing slightly on the bias (an angle of 10° is sufficient). There is less trouble when the seam runs at right angles to the warp.

For synthetic fibers it is best to use needles slightly rounded at the point, which therefore do not pierce the fabric yarns but push them lightly to one side. Needles such as normally are used for textiles laboriously pierce the synthetic fibers, and thus only promote the tendency to pucker.

As sewing thread a fully synthetic thread of a weight from 140/3-ply to 180/3-ply has proved best. It has high strength and low shrinkage.

The author recommends using as long a stitch length as possible, to reduce the number of needle penetrations; reducing the sewing speed; and running seams on the bias as much as possible.

BOOK REVIEWS

ORGANIC COATING TECHNOLOGY VOL II: Pigments and Pigmented Coatings

Author: Professor Henry Fleming Payne, Organic Coating Research Laboratories, Univ of Florida
Published by: John Wiley & Sons, Inc, New York • London (1961)
Vol II pp 675 to 1399, 34 pp of index to Vol II
Price: $17.50

Volume II of this set is intended to be used with Volume I entitled "Oils, Resins, Varnishes and Polymers", "to provide the student and new technical man in the paint and raw material industries with a concise but comprehensive manual of the chemistry, manufacture, and applications for the raw materials and finished products of the paint industry." This well-illustrated volume does not neglect the theoretical implications of the use of pigments and coatings. A sufficient discussion of basic theory accompanies the "working knowledge" provided in the text. For example, the phenomena of color and its measurement are discussed in explaining the hiding power of pigments. Surface activity as it bears on the problem of pigmentation is also discussed from a fundamental viewpoint. The Table of Contents includes the following headings: "Fundamentals of Pigmented Coatings"; "White Pigments"; "Extender Pigments"; "Inorganic Color Pigments"; "Organic Color Pigments"; "Black Pigments"; "Metal Pigments and Metallic Stearates"; "Principles of Formulation and Production"; "Preparation of Surfaces and Methods of Application"; "Architectural Paints, Industrial Finishes, Corrosion-Resistant and Chemical-Resistant Paint Systems".

This volume has been executed in a sound pedagogic manner with a summary at the end of each chapter, as well as excellent up-to-date bibliographies for each of the chapters. Professor Payne is offering the fruits of a life-time of research, experience and reflective thinking in this volume, and has succeeded in creating a highly useful addition to the literature in the field of pigments and pigmented coatings.

•

SURFACE-ACTIVE ADDITION PRODUCTS OF ETHYLENEOXIDE: Their production, properties, and applications

Author: Dr Nikolaus Schoenfeldt
Published by: Wissenschaftliche Verlasgesellschaft MBH, Stuttgart, Germany (1959)
Text in German
pp 452; price DM 68

For sometime now, the addition products of ethyleneoxide have been the basis for the evolution of a body of capillary-active materials that have steadily increased in number. This evolution is by no means complete, and is actually increasing in tempo.

Up till now there has been no general treatment of the domain available. One was forced to go to scattered references in textbooks, periodicals, and patents to obtain information in the field. Dr Schoenfeldt has attempted to fill this void, and has achieved his objective exceptionally well. The book is a must for all individuals who either employ, prepare or manufacture these chemicals. Even for those who have but a theoretical interest in the domain, the book will be an invaluable source of references and experimental information.

The book has many graphs and tables and an excellent index, divided into subject and author indexes.

•

BUYERS GUIDE TO IMPORTED GERMAN PRODUCTS (1960-1961)

Published by: German American Chamber of Commerce, New York, N Y
Available from: Nordeman Publishing Co, Inc,
350 Fifth Avenue
New York 1, NY
pp: 436; paperbound; written completely in English
Price: $6.75

"The third edition of the 'Buyers Guide to Imported German Products' has just been published for the German American Chamber of Commerce, New York, NY, by Nordeman Publishing Company. This comprehensive reference book is a complete up-to-date revision of the 1958/59 edition.

"The 'Buyers Guide' is the only reference book on German-American trade. It contains a directory of 2500 German export manufacturers, their 1500 U S importers or agents and a classified index listing over 2000 German products sold in the United States.

"The section, 'Facts on Germany', has been revised in order to provide American business with the latest information on Germany as a market and as a supplier. The contents include facts and figures on German business, taxation, government regulations, market research, conversion tables, statistics, travel, etc. The book also features a 14″ × 22″ business map of Germany with an index of over 1000 cities."

•

INTRODUCTION TO TEXTILES

Author: Evelyn E Stout, D Ed, assoc professor of textiles and clothing, N Y State College of Home Economics at Cornell University
Published by: John Wiley & Sons, Inc, New York, N Y (1960)
Price: $6.50

Utilizing the new Textile Fiber Products Identification Act's method of characterization and classification of textile fibers and fabrics, the author discusses the performance of some ninety important natural, man-made thermoplastic, and nonthermoplastic fibers. Particular attention is paid to "wash-and-wear" developments, as well as mixtures and blended fabrics.

Dr Stout's long and estimable experience in textile research and in teaching has made her presentation valuable to layman and technician alike. She assumes a background of practically little or no chemistry for her readers, and has made the descriptions understandable for those with or without a knowledge of elementary chemistry.

The following titled reports are available in German for purchase from the state of Nordheim-Westfalen, Ministry of Culture, address:

Westdeutscher Verlag
OPLADEN/RHLD
OPHOVENER STRASSE 3

No. 839
ON THE DETERMINATION OF ABSOLUTE DENSITY OF FIBERS
Author: J Juilfs, professor, Textile Research Institute, Krefeld
1960
pp: 24, three tables
Price: DM 8.10

* * *

No. 846
INVESTIGATION OF COTTON CARDS FOR THE PURPOSE OF ASCERTAINING THE CAUSES OF ERRORS OF FLUCTUATIONS IN THICKNESS
Authors: Herbert Stein, chief engineer, and Martin Eidelsburger, engineer, both of the Textile Institute of Metrology, Moenchen-Gladbach
1960
pp: 46, 23 illus
Price: DM 14.30

* * *

No. 847
INVESTIGATION CONCERNING THE WORKING PROCESSES OF BEATING MACHINES IN INSTALLATIONS FOR THE PREPARATION OF COTTON AND CELLULOSE
Authors: Herbert Stein, chief engineer, and Martin Eidelsburger, engineer, both of the Textile Institute of Metrology, Moenchen-Gladbach
1960
pp: 54, 29 illus
Price: DM 16.70

* * *

No. 879
ADDITION OF FIBERS OF ARTIFICIAL PROTEIN TO MIXTURES OF WOOL AND RABBIT HAIR FOR THE PRODUCTION OF HAT FELTS
Author: Hans Guenther Froehlich, Research Institute of the Hat Industries, Moenchen-Gladbach
1960
pp: 41, 10 tables
Price: DM 12.90

No. 885
ON THE EFFECTS OF THE ADDITION OF FATTY ACIDS UPON THE RHEOLOGICAL BEHAVIOR OF SOLUTIONS OF SIZINGS
Author: Ingeborg Lambrinon of the Engineering and Scientific Bureau for the Raffia Fiber Industry of Bielefeld
1960
pp: 85, 18 illus and three tables
Price: DM 16.50

* * *

No. 917
DETERMINATION OF THE PROCESSES DURING THE MOISTENING AND DRYING OF YARNS WITH PARTICULAR REGARD TO THE WORKING PROCESS OF SIZING MACHINES
Authors: Herbert Stein, chief engineer, and Gerhard Hoischen, engineer, Institute of Textile Metrology, Moenchen-Gladbach
1960
pp: 78, 75 illus
Price: DM 24.10

* * *

No. 918
A STUDY OF THE DISTORTION PROCESS IN THE STRETCHING MECHANISM OF VARIOUS SPINNING MACHINES
Authors: Herbert Stein, chief engineer, and Martin Eidelsburger, engineer, both of the Textile Institute of Metrology, Moechen-Gladbach
1960
pp: 44, 15 illus and three tables
Price: DM 13.70

* * *

No. 920
TENSIONS IN THE YARN DURING WET RING SPINNING OF RAFFIA FIBERS AND ITS DEPENDENCE ON THE MANNER OF THREADING AND THE SHAPE OF THE RING AND RUNNER
Authors: Rudolf Otto, engineer, and Manfred LeClair, textile engineer, both of the Engineering and Scientific Bureau for the Raffia Fiber Industry of Bielefeld
1960
pp: 54, 14 tables
Price: DM 16:40

GENERAL CALENDAR OF COMING EVENTS

ACHEMA
June 9-17 (13th International Chemical Engineering Exposition and Congress———Frankfurt am Main, Germany)

AMERICAN HOME ECONOMICS ASSOCIATION
June 27-30 (52nd Annual Meeting———Cleveland, Ohio)

AMERICAN OIL CHEMISTS' SOCIETY
May 1-3 (34th Annual Meeting, Sheraton-Jefferson Hotel, St Louis, Mo)

CHICAGO SECTION, AMERICAN CHEMICAL SOCIETY
Sept 5-8 (11th National Chemical Exposition———Chicago Amphitheatre, Chicago, Ill)

FIBER SOCIETY
April 27-28 (Spring Meeting———Georgia Center for Continuing Education, Athens, Ga)

INTER-SOCIETY COLOR COUNCIL
April 10-12 (30th Annual Meeting———Sheraton Hotel, Rochester, NY)

INTERNATIONAL TEXTILE MACHINERY EXPOSITION
Sept 1962 (3rd Exposition, Hanover, Germany)

KNITTING ARTS EXHIBITION
April 24-28 (Atlantic City Auditorium, Atlantic City, NJ)

NATIONAL COTTON COUNCIL OF AMERICA
Nov 8-9 (1961 Chemical Finishing Conference———Sheraton Park Hotel, Washington, DC); Oct 3-4, 1962 (1962 Chemical Finishing Conference———Sheraton Park Hotel, Washington, DC)

PHI PSI FRATERNITY
May 4-6 (58th Annual Convention, Shoreham Hotel, Washington, DC)

PURDUE INDUSTRIAL WASTE CONFERENCE
May 2-4 (16th Conference———Purdue Memorial Center, Lafayette, Ind)

QUEBEC SECTION, CANADIAN ASSOCIATION OF TEXTILE COLOURISTS AND CHEMISTS
Apr 21-22 (Annual Meeting and Dinner, Sheraton-Mt Royal Hotel, Montreal, Que); June 10 (Annual Golf Tournament—Drummondville Country Club, Drummondville, Quebec)

SCHWEIZERISCHER VEREIN DER CHEMIKER-COLORISTEN
October 12-14 (Symposium on "Permanent Finishing 1961"———Swiss Federal Institute of Technology, Zurich, Switzerland)

SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS ASSOCIATION OF THE UNITED STATES
Apr 13 (Luncheon Meeting———Palm Terrace Suite, Hotel Roosevelt, New York, NY); May 22-24 (Spring Outing———Skytop Lodge, Skytop, Pa); June 15, Sept 12, Oct 10, Nov 14 (Luncheon Meetings———Palm Terrace Suite, Hotel Roosevelt, New York, NY); Dec 7 (Annual Meeting and Dinner———Hotel Roosevelt, New York, NY)

UNION OF PURE AND APPLIED CHEMISTRY
August 6-12 (18th International Congress of Pure and Applied Chemistry———Montreal, Canada)

WORLD CONGRESS FOR MAN-MADE FIBERS
May 15-18, 1962 (2nd World Congress, London, England)

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CLASSIFIED ADVERTISEMENTS

Advertisements in this section are restricted to HELP WANTED — POSITION WANTED — EQUIPMENT wanted or for sale. Rates, effective February 1, 1951; One-time, $14.00 per column inch; 13 or more times, $12.00 per column inch: Position Wanted, $4.00 per column inch. Figure 38 average words per column inch. Publisher reserves the right to reject or discontinue any classified advertisement. Replies should be addressed: Box Number ..... c/o American Dyestuff Reporter, 44 East 23rd Street, New York 10, N. Y.

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294 Washington St. Boston 8, Mass.

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EXCELLENT POSITION AVAILABLE FOR PACKAGE DYER of Orlon and other synthetic fabrics. Thoroughly experienced. Salary commensurate with ability. Unlimited opportunity depending upon the imagination and capability of the individual. This outstanding company located in New York City vicinity. All replies confidential. Write Box No. 125

WANTED: TEXTILE CHEMISTS by large New England circular knit plant for laboratory and production departments. Please send complete resumes. Write Box No. 126

WANTED: TEXTILE CHEMIST AND DYER—Degree in organic chemistry or dyeing—with some experience in package and skein dyeing of nylon and Dacron. Must be aggressive and willing to accept responsibility. Position now in laboratory, leading to full control of dyehouse as head dyer. New England. Salary open—Please send complete resume. Write Box No. 127

WANTED: CHEMIST—with several years of practical experience in the application and evaluation of textile specialties, detergents, softeners, resins and other finishes for laboratory and customer service work. Excellent opportunity in Southern branch laboratory of large well-known organization. Send complete resume, salary requirements. Write Box No. 138

WANTED: SALES REPRESENTATIVE to represent textile chemical company in the Southern territory. Must have mill experience or previous experience in textile chemical sales. Excellent opportunity handling well-established line. All replies confidential. Write Box No. 139

WANTED: ASSISTANT PLANT SUPERINTENDENT—Excellent position for an experienced knit goods synthetic and cotton dyer who can take charge as assistant plant superintendent of leading knit cloth firm. Plant located in North Carolina. Excellent opportunity for the right man. Send full resume. Write Box No. 140

CAREER OPPORTUNITY—for recent textile school or textile chemistry graduate age 21-24. The man we are looking for should have a friendly, outgoing personality and be interested in the idea of a sales career—even though he may not be heading in that direction now. Thorough training program, good salary and benefits, excellent growth possibilities—New York area. Replies held in strictest confidence. Our employees know of this advertisement. Write Box No. 141

WANTED: CHEMIST—with thorough scientific background for successful cotton finishing plant in New England. Excellent opportunity. Send detailed resume, including salary requirements. Write Box No. 143

WANTED: DYEHOUSE SUPERINTENDENT to assume full responsibility for dyeing department. Must be conversant with the dyeing of wool, Orlon, nylon and blends of wool and synthetic fibers in skein, package and stock form. Should be good organizer and production man. Excellent salary with liberal bonus arrangements, full coverage for sickness, hospital and pension plan. This position is in a centrally located Ontario mill. All replies treated in strictest confidence and interview would be arranged with applicant. Write Box No. 137

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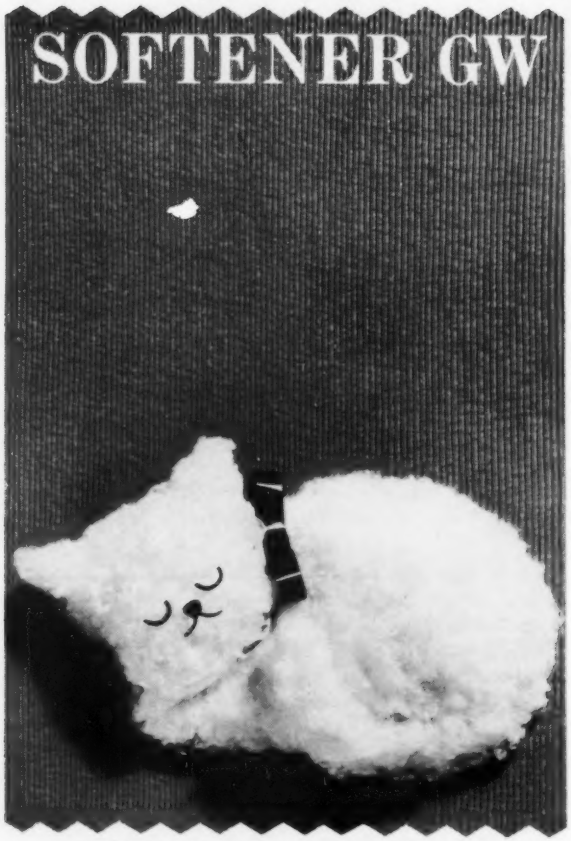

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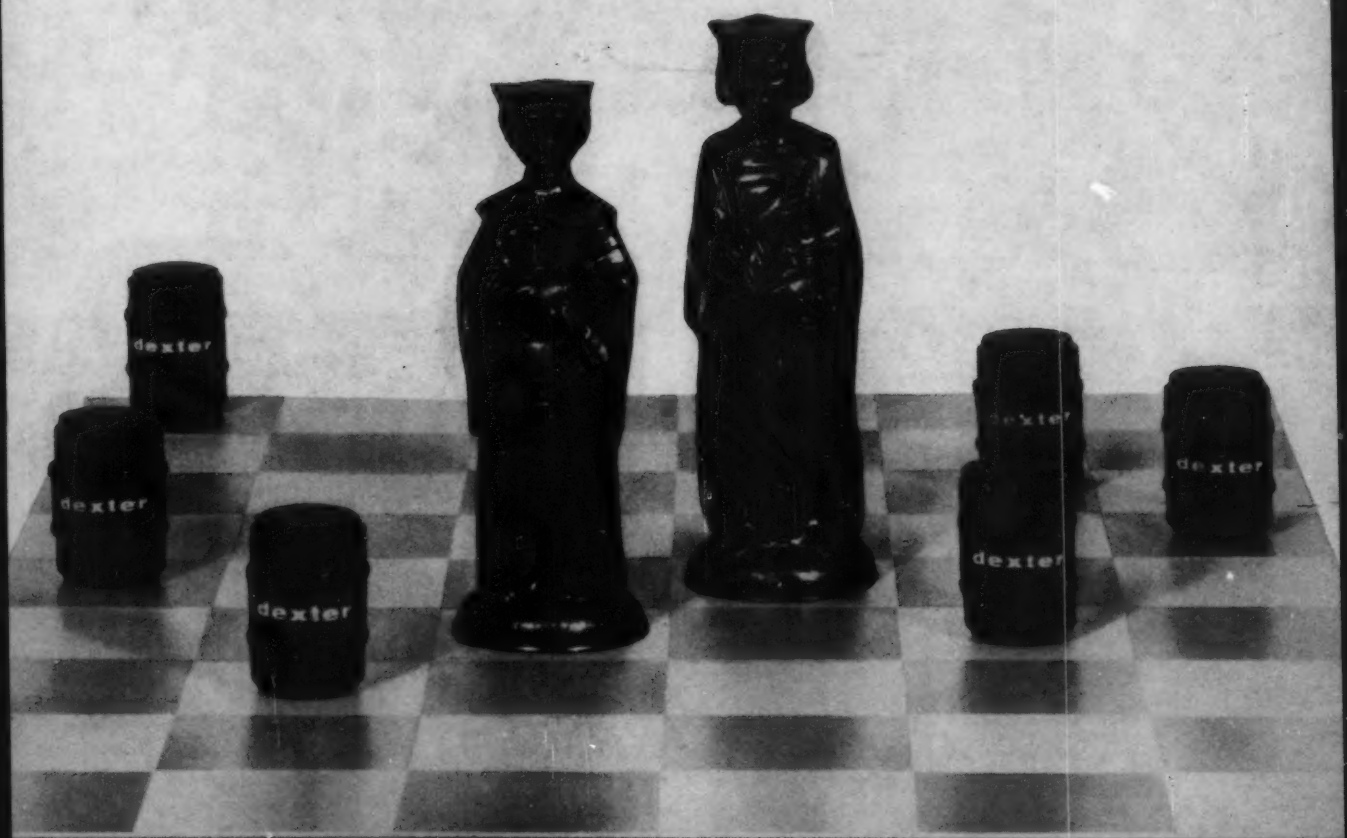

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